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**School Board Journal**  
A PERIODICAL *o* SCHOOL ADMINISTRATION

Devoted to the Interests of School Boards, Superintendents,  
School-Business Officials, and School Architects



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THE AMERICAN

# School Board Journal

A Periodical of School Administration

ADMINISTRATION: SUPERVISION: FINANCE: PERSONNEL MANAGEMENT:



BUILDING DESIGN & CONSTRUCTION: BUILDING OPERATION:

AND MAINTENANCE: BUDGETING AND ACCOUNTING: RESEARCH: PUBLIC

Thirty-Eighth Annual School Building Number





Wyandotte High School, Kansas City, Kan.  
Hamilton, Fellows & Nedved and Jos. W. Radotinsky,  
Associated Architects. Inter-State Htg. & Plbg. Co.,  
Mechanical Contractors.



Elkader School, Elkader, Iowa  
Oren Thomas, Architect. B. E. Landes, Mechanical  
Engineer. Carstens Bros., Mechanical Contractors.



Elementary School, Frankfort, Ky.  
Leo J. Oberwarth & Son, Architects. Chas. Whitehead Co.,  
Mechanical Contractors.

*Again, we say*  
"Isn't it significant  
*that*

JOHNSON  
AUTOMATIC  
HEAT CONTROL

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# THE AMERICAN School Board Journal

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1938

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## Will The Schools Get Their Share?

With the revival in the industrial and trade activities of the Nation, the question may well be asked whether the school interests will share in the prospective era of better times.

If the farmer and laborer, the merchant and manufacturer, have once more entered a period of prosperity, it only follows that such revival will sooner or later be reflected in a more substantial tax yield and consequently a better support of public institutions.

The immediate question centers upon the progress made toward improved conditions which will find definite expression in restored property values. Delinquent tax rolls have told a distressing story. Property must possess a selling value, or an earning power, before it can meet tax levies. The periods between the levying of taxes and their final collection sometimes cover several years. Thus, a return to normal, predepression values does not in all instances mean an immediate relief to public services, in the nature of improved tax yield. It does mean a gratifying tendency in that direction.

Many of the larger school systems have felt the improvement in the tax receipts and have been able to restore salaries to a former basis, engage in more liberal appropriations for supplies and equipment, and have been warranted in planning urgent plant expansion. The wave of improvement in the economic situation has also touched thousands of smaller units.

The judicious school administrator, nevertheless, must be guided by an outlook for the future, meeting present needs with a reasonable anticipation of a future income. At present he is warranted in holding to an optimistic viewpoint. A better day is at hand. The schools will get their full share.

THE EDITOR

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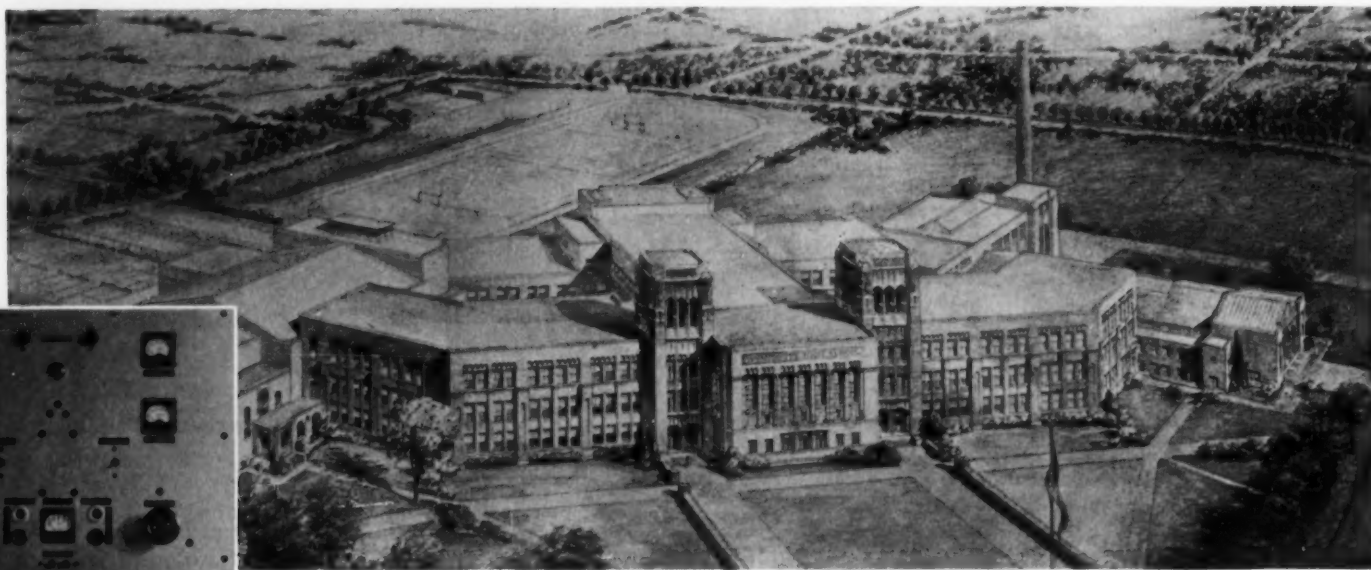
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The contents of this issue are listed in the *Education Index*.

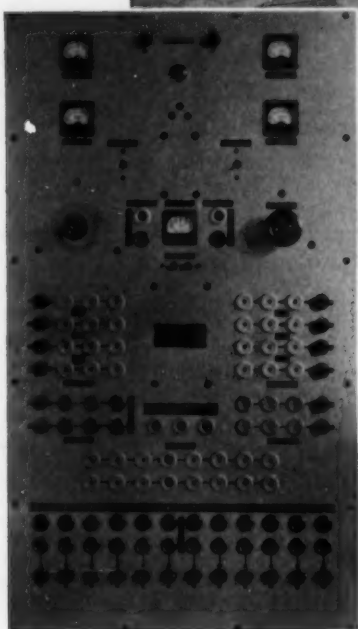
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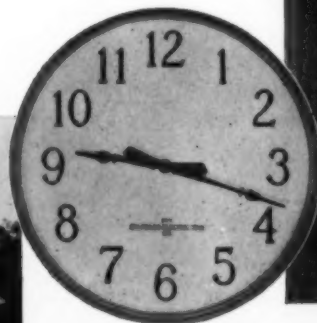
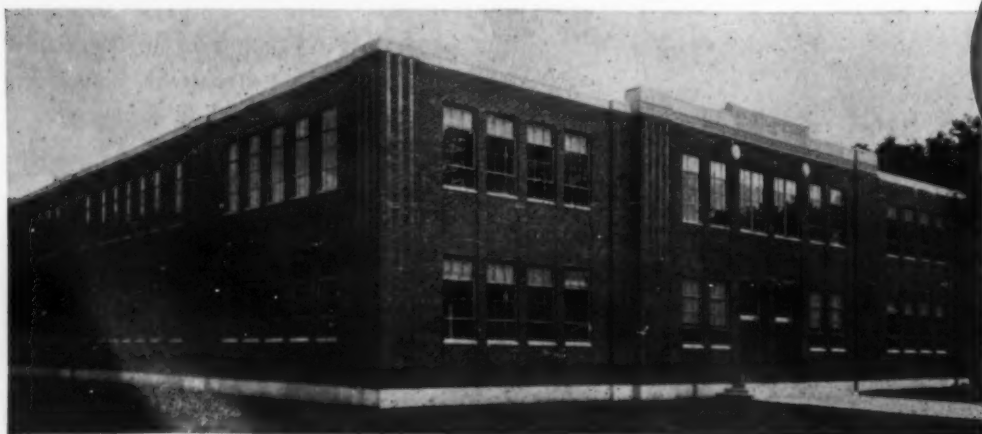
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# THE AMERICAN School Board Journal

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## The Function of an Architect

Guy E. Wiley<sup>1</sup>

It has been said that in modern Mexico "the profession of architecture is considered as an appointment for public service." This statement so tersely put arrests one's attention.

"An appointment for public service." What kind of public service? It seems it is literally this, service in the public interest for which their training particularly fits them — volunteer membership in and service for bodies handling problems of public planning, engineering or other technical matter. While this type of public service may not be so general in this country, perhaps, as to be noticeable to the foreign observer, the same type of service is rendered by many members of the architectural profession in the United States.

There is, however, another way in which the profession of architecture is an appointment for public service. The architect is primarily a creator of buildings whose exterior aspect is nearly always a public possession. This exterior architecture is literally the stuff of which our cities are made. The quality of its architecture determines the physical character or attractiveness of the city, large or small. The nature of this public service of the architect, which is inherent in his profession, is too often overlooked by public and architect alike. Architects complain of the lack of appreciation of fine architectural achievement on the part of the public. On the other hand, the public could rightfully complain of the lack of such achievement in the work of many an architect. The creation of art commissions with jurisdiction over public art, including buildings, indicates official recognition of this aspect of the architect's work.

Architecture, like beauty, is hard to define. No set of rules produces good architecture or design. However, the principles of composition, mass relations, scale, proportion, and other "laws" when understood and properly applied help to make design good. All ability in design is an inborn

talent, or, as Ruskin says, "a gift from heaven." That gift, like the natural diamond, is in the rough. Study and practice are needed to develop it. The successful devotee of any art must have the "gift from heaven" and he must have a tenacity of purpose which will keep him at work, studying and developing his talent until some measure of mastery is attained. No architect becomes an architect by putting the word "Architect" on his office door.

### Specialization in Architecture

In 1936 a gift of \$500,000 was made to Harvard University for the establishment of a new chair in the general field of economics. The particular work to be done by the occupant of the new chair is to co-ordinate the various fields of specialized knowledge in that department with other related fields. The donor felt that the solution of our manifest economic difficulties cannot be accomplished by increasing economic specialization alone. His idea was that greater progress could be made by the correlation of economic theory with other special fields concerning the behavior of man as a social being. Architecture, like learning, is made up of specialized fields. The rapidly increasing mechanization of buildings and the growing complexity of occupational requirements are evidences of this specialization. The function of the architect is like that of the new Harvard professorship, a co-ordinator of specialized knowledge.

Building specialists, like the specialists of the university faculty, all perform necessary and important parts of the work of producing a complete and satisfactory result, be it a building or an education. Individually each of their particular specialties is developed further and further, and as this development proceeds the difficulty of co-ordinating the work of each with the others to produce an efficient and satisfactory combination of all is increased.

The time when the architect individually can do all the work required in creating one of our larger buildings is past. Even smaller structures which embody modern demands in the form of mechanical equip-

ment require the attention of specialists. Heat and ventilation are now generally automatic and the time is not far distant when light will be automatic also.

The public aspect of buildings, or architecture in a very narrow sense, is one of the specialties. In a broader sense architecture is much more, and even in the narrow sense of architectural design it has a dual character, including both the work of the artist or architectural designer, and that of the practical planner. The designer makes the building a worthy unit in the physical make-up of the city. He makes many sketches before adopting one as the best solution of the problem or he may have the good fortune to find the best solution very soon. Time spent by the designer and planner on the early sketches is well spent. The architect has but one shot at the target, and he must hit the bulls-eye with that. The planner takes the program of occupational requirements and translates it into physical facilities. He takes the building program, studies the necessary correlation of its parts, adds or obtains information or any overlooked but necessary items, makes equipment layout to determine space requirements (or gets this done by another specialist or consultant whose work lies in the field of occupational requirements), foresees possible future extensions and tries to keep enough flexibility in his plan to permit future changes. The joint work of these two men in design and plan produces the architectural plans, or master plans of the building.

### Work of the Engineers

An indispensable member of the architectural family is the structural engineer. He makes the structural plans, usually a separate set of drawings. His work makes the building stand up. His is an exact science, based on the use of the minimum amount of material fabricated in the most economical manner, to produce the maximum strength. He does not work in the way an architectural man works, making dozens of sketches in an effort to find the best solution. The engineer's ideal is to do the work but once and make it right the

<sup>1</sup>Mr. Wiley, who is Assistant Chief of the Bureau of Buildings and Grounds, Milwaukee Public Schools, read this paper before the National Council on Schoolhouse Construction, Columbus, Ohio, October 22, 1937.

first time. A correct analysis of the problem, correct computations of loads and stresses invariably produces the correct result. He has an analytical and not an artistic type of mind and consequently a different mental attitude toward his work.

In addition to the work of the structural engineer, heating and ventilating plans will be required which are produced by the mechanical engineer. His is a typical engineering type of mind and he can see eye to eye with the structural engineer. Plumbing plans and electrical plans will also be required. They are made by plumbing and electrical engineers respectively. One mechanical engineer, however, may be in charge of all mechanical branches. The rapid and elaborate development of this part of the work, the mechanization of buildings, is continually absorbing a greater proportion of the building dollar. This leads to the development of specialists in each of the mechanical branches of the work.

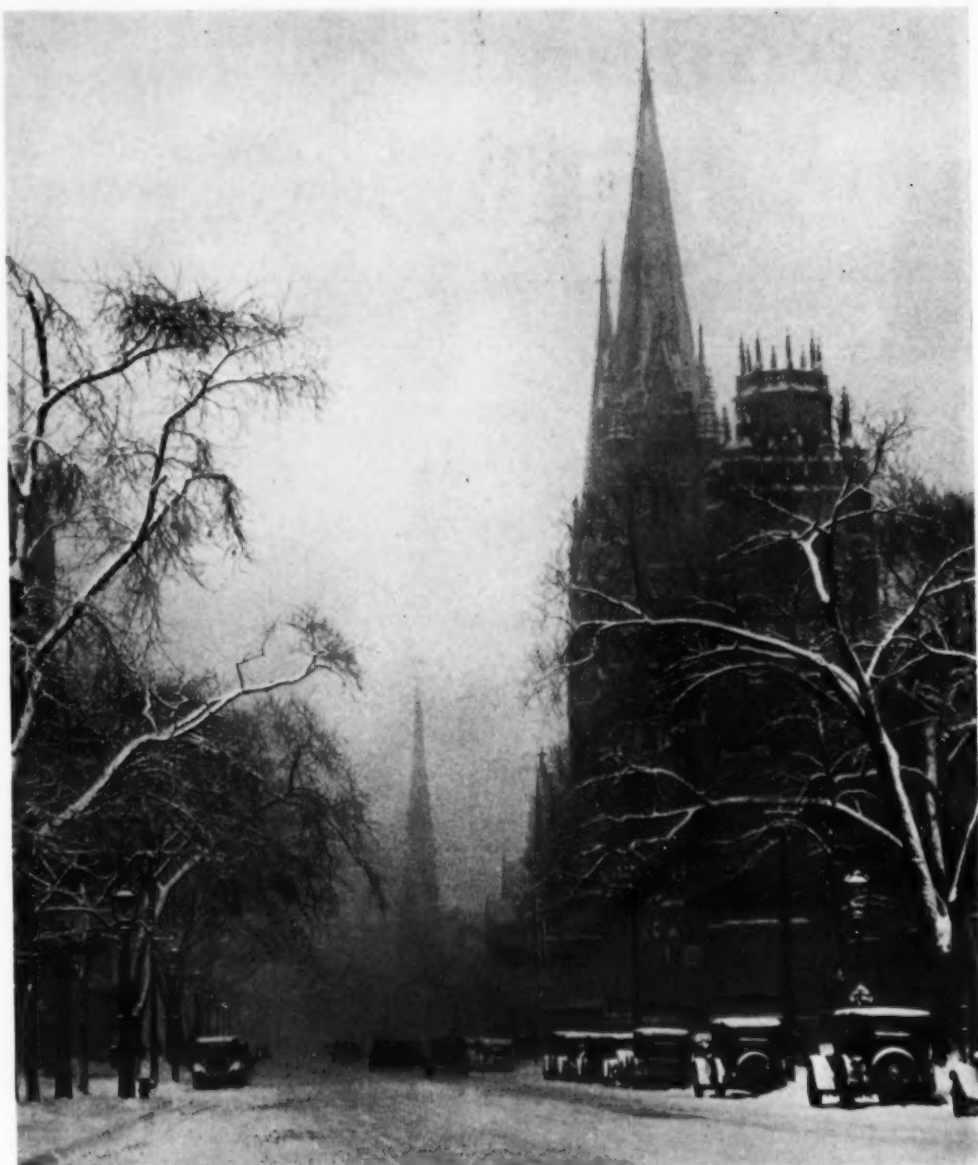
The various divisions of the architect's work referred to are not all. The specification writer, business-office personnel, and the field superintendents are still to be added to complete the working force. The architect must not overlook the financial requirements of his work. In many fields the financial analyses of proposed projects are of fundamental importance as in buildings erected to produce predetermined financial returns. The financial specialist is then required. In passing it might well be stated that proper remuneration for services performed is of more importance than it is usually credited with being. Free services and cut-rate commissions never pay anyone.

### The Architect as Co-ordinator

Modern life has brought about the passing of the individual in business. The ramifications of business have become too extensive to be undertaken by the individual and he is being supplanted in nearly all fields of endeavor by the organization. Architecture, while still an art, has become a business and the same conditions apply to it as to other business. The function of the architect, that of a co-ordinator of the work of the specialists of his organization, is essentially the same regardless of whether his is a complete organization or whether he works through the offices of separate specialists.

The secret of the success of a large specialized organization is in the co-operation of the various individuals or individual units. The architect at the head of an architectural organization as a co-ordinator must develop and maintain a spirit of co-operation. Co-operation is maintained by giving up to the requirements of others. Progress is usually made only through compromise. The decided individual who knows he is right in his own specialty and whose motto is "No compromise" is an obstacle however talented he may be. Teamwork always wins in architecture.

Having considered the function of the



*The quality of its architecture determines the attractiveness of a city, large or small.  
Photograph by Dr. M. J. Martin.*

architect through his own organization, there still remains the relation of the architect to the owner or to the public through the representatives of public ownership. The architect as a co-ordinator secures a successful result in his own organization through compromise. It is no less important that the owner or his representative working with the architect through the occupational program also be actuated by a spirit of compromise.

It is only by co-ordinating the requirements of the occupational program with the financial requirements and the artistic, structural, and mechanical building necessities that a really successful building can be built. The owner, whether a public body or private individual, must give up some details of his requirements, occupational or financial, just as all the other building specialists must give up something of theirs in the interest of the success of the building as a whole. In this also the architect is the co-ordinator. Teamwork, including the owner and his representatives, wins in architecture.

### OMAHA SCHOOL FINANCES

A study has just been made of the total school revenue and the total income available for current expenses for the Omaha public schools. The findings indicate that the total income since 1930-31 has dropped from \$4,586,000 to \$3,380,000, or a reduction of \$1,206,000. After deducting the amount required for debt service, the amount remaining for current operating expenses and capital outlay was \$3,824,000 in 1930-31, and only \$2,508,000 in 1936-37. In other words, the amount available for current operating expenses and capital outlay dropped \$1,317,000 from 1930-31 to 1936-37. The total income per pupil, based on the average daily membership was \$103.40 in 1930-31, \$76.75 in 1933-34, and \$63.79 in 1936-37.

The study brought out that in spite of the reductions, the Omaha schools have up to this year paid all of their bills in cash from the reserves built up during the prosperous years. During 1937-38, these reserves will be practically used up and the schools will face a most serious financial situation, since the maximum mill levy permitted by law has been in effect since 1926. Slight relief is expected by the school officials provided the voters approve at an election in 1938, the provisions of a law, providing \$260,000 additional for current expenses and \$165,000 annually for the erection of school buildings. According to Supt. Homer W. Anderson, a substantial increase in assessments or new types of revenue are needed.



# Modern Trends in School Planning as a Result of Changing Curriculums<sup>1</sup>

N. L. Engelhardt<sup>2</sup>

Much has been written about the improvement of schoolhousing. It is interesting to review this material. Repeatedly the emphasis of the improvement is upon the mechanics of planning rather than upon an understanding of basic educational need. Protection against hazards, sanitation, ease of exit, the administration of student circulation and freedom from noise or disturbance within or without the structure are types of criteria that have been stressed to the point of transparent thinness for any further gains. Recent planning has not brought forth any too striking illustrations of the use of basic educational criteria as fundamental considerations in plant planning.

There should be no disparagement of the movements which have resulted in the safety and comfort of school-building occupants. The terrible loss of life experienced in school disasters has compelled attention to these matters. The survey reports of the past twenty-five years have also indicated the need for better sanitation, for more economical planning, for superior lighting, and for more humanitarian equipment. These same years have witnessed a vast improvement in these phases of school-building planning and management.

State divisions of school buildings have improved the service rendered communities by insisting upon safe, sanitary, and comfortable structures. State regulations or state laws make it difficult today for a building plan to "get by" which does not conform to fundamental requirements on exit, swing of doors, height of stair treads, and similar proven aids to building travel or building use. Today, as in the days when many present-day building practices were crystallized into patterns, the educational implications of each phase of the school plan are given slight consideration. Education is not static in nature and yet new school buildings of today, fashioned after yesterday's mold, tend to standardize educational programs and to prevent desirable educational change. School-building planners must continue to employ the best practices gleaned out of the safety, sanitation, and comfort programs of the past and must just as certainly explore the educational backgrounds and make the planning adjustments that the educational program dictates.

In past planning, the mere housing of

groups has afforded the planning emphasis. The assumption was that the educational process was a fixed thing. It was represented in the lay mind by certain steps, more or less as follows: (1) the selection of a textbook, (2) the assignment of a lesson to be learned, (3) the hearing of the recitation on the assignment, and (4) the reassignment in case of failure, or the assignment of the next lesson. Children, enjoying such an educational program, can be housed without difficulty. Fixed seats, a minimum of space, four walls, and a roof seem to suffice. Any change in the definition of education, even though slight, may require building alterations. Vast changes in definition and practice must, of course, be acknowledged. Yet adaptation of plant to meet these changes has lagged far behind. Perhaps this may be considered the greatest lag in education today, for building conditions can stimulate educational progress or provide the alibi for educational backwardness.

## Early Errors in Planning

Whenever a school building is built, or an addition made, it is reasonable to assume that certain criteria were used to determine placement, space sizes, orientation, and other general characteristics. Probably, in few cases are the decisions on these problems left to chance. It may be true that at times those setting up criteria or reasons for action have not been too discerning or even too disturbed about the educational implications. When manual training and domestic science were first added to the curriculums of many schools, they were placed in basement rooms just because the basement caverns of many old schools represented an investment of school money for which school boards long sought some returns. Even today room for these subjects is being made in a basement, certainly not because it is a desirable thing to do, but because chance first placed them there and not everyone is willing to analyze the reason for the inclusion of these subjects in the curriculum and the results they are expected to secure.

The early installations of auditoriums were under the roof and perhaps even on a third or fourth floor. Today's plans frequently show auditoriums in equally absurd locations. The only criteria of the early planning were apparently availability of space and economy. Safety, accessibility, and educational utilization were certainly not given much consideration. Many of today's auditoriums are planned with due reference to every other criterion except these: "How should the school be using this space to get the greatest return

for the money spent?" and "Is the room so planned, located, and equipped that the desired educational return can be obtained?"

School gymnasiums have, for many years, been planned with narrowly limiting criteria as bases, i.e., "Can the team play a regulation basketball game here?" "Can enough spectators be seated here?" Basic considerations of fresh air, sunlight, availability for the many, and character of shower and locker room have given way to the "Roman holiday" criteria. Consider the reasonableness of planning gymnasiums throughout this country to meet the requirements of one game, when America's leaders in health and physical education have laid down such significant programs, including many games and participation therein by all students. Certainly reconsideration of the criteria for building health and physical-education spaces in our schools might bring about desirable change in future planning and at least take gymnasiums out of basement holes and provide them with fresh air and sunlight. Gymnasiums might become entirely different kinds of structures for high-school and elementary centers if all the criteria of an acceptable democratic program were honestly applied.

What have been the criteria used in the determination of the character and location of the administrative suite in a modern school? The space is frequently so limited that one marvels at the restricted concepts of the services to be rendered. In an early day, the principal was chiefly disciplinarian and general factotum of the school. All he needed was an office where he could sit and rule. This fascist notion of the school principal has changed completely, and yet the planners of new buildings handicap the program for all time by adhering to the thoughtlessly accepted criteria of the past.

## Schoolhouses Should Not Be Alike

Perhaps these references to undue reverence for traditional planning and indifference to fixity of educational concepts are sufficient to emphasize the point. Schoolhouses should not be alike. In them may be incorporated the highest standards of safety, lighting, sanitation, economy and durability, but in educational layout they should represent the highest degree of adaptability to local educational needs. The local schoolhouse should be democracy's last line of protection. It should house no standardized program of education; it should represent no regimentation through educational patterns or fiats. The local schoolhouse should symbolize man's

<sup>1</sup>Address made before the 26th Annual Convention of the National Association of Public School Business Officials, Baltimore, Md., Tuesday, October 12, 1937.

<sup>2</sup>Professor of Education, Teachers College, Columbia University.



effort to explore, to experiment, and to learn through participation. The spaces provided should offer handicap neither to individual nor to community growth.

State divisions of schoolhousing, co-operating with divisions of rural, elementary, and secondary education, are in a splendid position to pioneer or to suggest rethinking educational plant facilities in terms of fundamentally sound educational advances. That state division of schoolhousing will early find itself lagging far behind if the stress in building planning is continued merely on "ratio between window and floor area," "maximum allowance of gymnasium floor space," or "the supposedly correct size of an elementary classroom." Let no administrative officials in a centralized educational bureau consider their services worth while to locality or state except as experimentation in educational program and in schoolhousing is encouraged and even stimulated. The last word in schoolhousing will never be said. Standards may come and standards may go, but new educational programs, based on better teaching methods and higher social ideals, will go on forever requiring building adaptation.

In summer school a year ago I proposed to a group of superintendents of schools in my advanced course that they discover what leaders were thinking in the various phases of high-school subject matter. I asked the group whether they would like to plan the high-school classrooms of tomorrow. There was universal acceptance of the desirability of this as a professional class project and so our group divided into a series of committees for the purpose of making contacts with teacher groups in the social sciences, natural sciences, physical sciences, fine arts, language arts, and the like. After many joint conferences in which teachers and administrators participated without feeling any local restraints of curriculum or administrative policy, the administrative committees reported back on their findings of what teachers, supervisors, and they themselves wanted in the way of teaching and learning spaces for tomorrow's schools. The superintendents divided their proposals into two groups: first, the next and feasible steps in making changes in school-building planning; second, the ultimate desirable type of school for American community groups.

There was a very distinct challenge in this project for the superintendents of schools and their coworkers. Many had accepted the form and equipment of the classroom as a fixed thing for all time. Many had not endeavored to discover before the true relationship between the school curriculum and the plant which housed its program. The challenge is one which might well be accepted by administrators and teachers in any locality. "Why did we plan the schoolhouse we built?" and "How could it have been done better if we had dug more fundamentally into the real purposes of education?" are questions which local groups might ask themselves.

### Some Proposals for Betterment

The first proposals for change made by these graduate students came out of a recognition of the fact that administration must become a more democratic process and that the schoolhouse must be a place designed for fine social living as well as for learning. The students proposed teaching spaces from which fairly exuded the spirit of the subject to be taught. They recommended less conventionalized equipment. They suggested that education should take cognizance of the devices and materials which man's genius is constantly preparing for social, educational, and economic use. The room spaces, it was suggested, should reflect in painting and picture the culture of the community as well as the environment of the subject being taught. Rooms designed for more student participation and the presentation of culminating activities were some of the first building advances proposed.

In the second group of proposals were included drastic changes in school-plant planning based upon the more fundamental changes occurring in the curriculum itself. When administrators and subject-matter specialists earnestly attacked the problem of planning for a particular field, the emphasis was soon directed toward the integration of all subject matter. The subject-matter specialists, whether in the social sciences, the physical sciences, or in physical and health education or any of the other large groupings of present-day curriculums, felt confident that the school of tomorrow must to a large degree be built around their area of subject matter as a center. It is certainly encouraging and delightful to find such enthusiasm among subject-matter specialists when they begin to think of the relationship of their area of work to educational development in general. Of course, it is very desirable to take the social sciences as a core and build all of the plant around the social sciences. Similarly can a program be developed for the physical sciences or for health and physical education and the like. Obviously, this is an extreme into which the thinking of enthusiastic specialists may be carried.

It is interesting that among approximately one thousand students, who were applying themselves to this problem and meeting frequently in conferences, there was unanimity of agreement among groups that the laboratory type of educational space must supplant the textbook-recitation type of classroom. An illustration of what was meant by the laboratory is here given for the social sciences. The social-science group desired a large laboratory in which there was much of modern, economic, social, and governmental material constantly on display. Large project areas in which group projects representing commercial, industrial, and other development could be presented, work spaces for small groups, library alcoves, and files for materials and storage were some of the outstanding features of the proposed labora-

tory. Adjoining the laboratory was an audio-visual studio where the problems of the social sciences might be definitely portrayed in intimate relationship to all aspects of world living. Rooms adjoining the laboratory included group rooms for discussion and planning, reading rooms, and special teacher guidance and conference spaces, as well as teacher-student curriculum rooms in which the curriculum materials of the current program were constantly in the process of being developed by the students themselves with the aid of a curriculum teaching expert.

### Teaching Values of the Laboratory

This kind of a laboratory should teem with life. It should afford a wonderful opportunity for exploration and guidance. It should drive drowsiness out of the classroom and stimulate each student to some real contribution to the work of the entire social group. The question may well be raised whether our schools of tomorrow are going to have laboratories like these or whether they are still going to continue to have high-school recitation rooms in which limited segments of subject matter are to be parceled out to children who are being denied the privilege of wide exploration, and the development of initiative, responsibility, and creative powers which the work of such a laboratory would seem to make possible.

The natural-science group, working at Teachers College, Columbia University, under the direction of Professor Samuel Powers, co-operated in endeavoring to discover the desirable natural-science unit for a modern school. The values to be derived from the study of the natural sciences as a unified whole, and their real relationship to the social-science studies and to other areas of the curriculum, led to the development of an entire unit in the modern school for the integration of the natural sciences with the other areas of learning. When the combined groups were ready to present a layout for this area of instruction, the spaces bore little resemblance to the stereotyped chemistry, physics, and biological laboratories found in most of our schools. A description of these spaces and their contents would be too extensive to include here. Let me state, however, that it would be most interesting for you to analyze the natural-science program of your community and school, set up the aims upon which you, your fellow teachers and parents could agree, and then to plan the school building around the program which you would set up. This, to me, is real functional planning. Many other ideas of functional planning have been discussed or written about from time to time. If functional planning does not originate with the true function of education in every instructional area, then it is hard to conceive of what can be meant by this widely used term.

Bruner, Caswell, Hopkins, Norton, and other curriculum workers have been doing

(Concluded on page 108)

# A Suggested Design for an Activity School Unit

Arthur L. Martsolf<sup>1</sup> and Lulu L. Martsolf

Everyone who is interested in our schools eventually considers the rapid development of new philosophies of education. School administrators are interested in these philosophies not only from an educational standpoint, but also as they may cause changes in the physical equipment of their schools.

Generally new methods and curriculums are introduced slowly, and physical changes are made gradually. Little difficulty arises in changing a traditional school to a departmentalized one; and it is not difficult to replace old, worn-out stationary desks with tables and chairs, when changing to a "unit" method school. The changes in physical "equipment" are probably made more easily than those in personnel and method.

Great changes have been made in our educational philosophy and the correlative educative methods, which have naturally preceded the development of educative materials and equipment and the buildings which house them. It has been interesting, for instance, to see high-school stages grow from mere "platforms," to broad, well-equipped theaters, and classroom-size spaces for exercise increase to large "field houses" with gymnasiums and swimming pools. And now we are seeing these specialized facilities becoming essential parts of the elementary-school buildings.

However, classrooms have changed very little structurally or architecturally, except as other types of buildings have changed.

<sup>1</sup>Architect and Designer, Board of Education Building, St. Louis, Mo.

Where climate has permitted, there have been some interesting innovations in planning. I have in mind, for example, those schools in Europe and in the more temperate regions of Mexico and the United States, where the architects have opened the rooms to the outdoors by providing large, glazed doors in the place of conventional windows. No doubt other developments will follow. New uses always bring new structures, new functions bring new forms.

Several years ago, I visited an "activity" school which has grown out of a "traditional" type. The classrooms, of course, were traditional, each room measured 22 by 30 feet, the outside wall mostly of windows, two doors at one end opening into a cloakroom, three walls with blackboards except where the main and cloakroom doors cut through. There was a cork tack panel, placed above all the blackboards and over most of the slate.

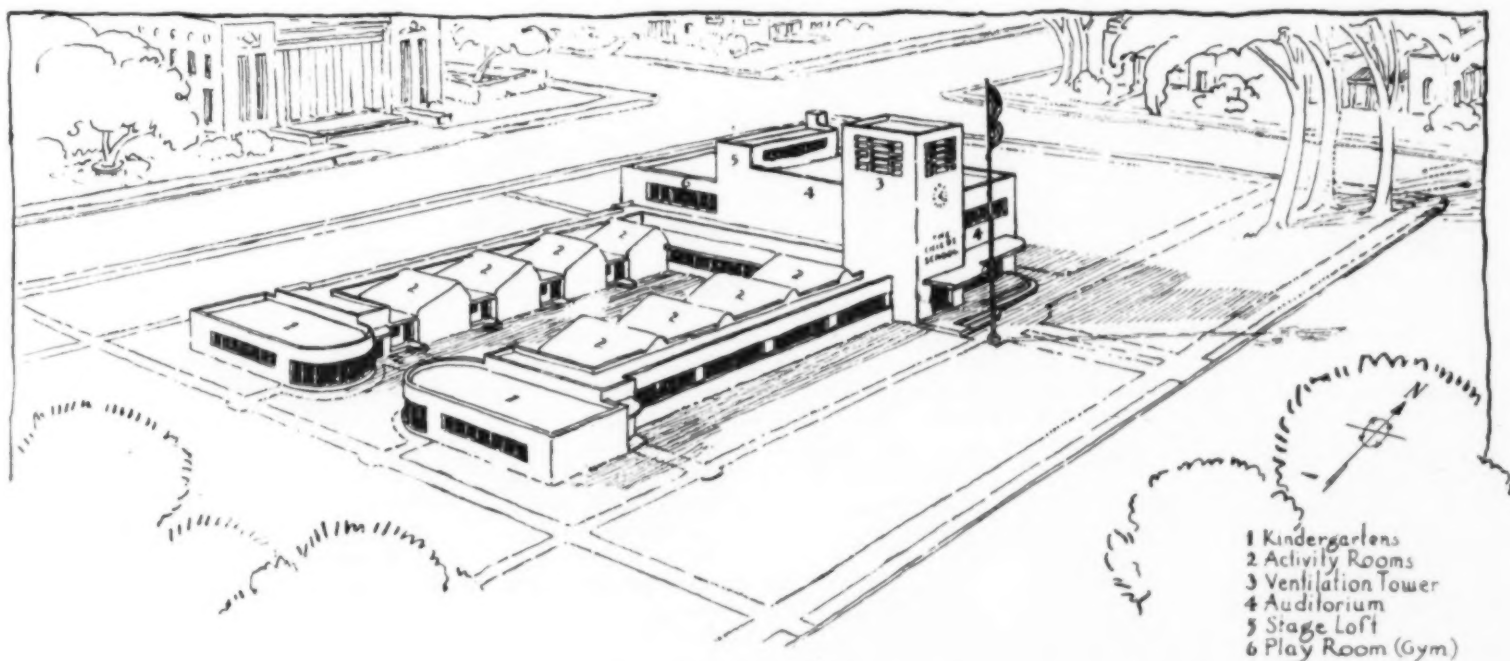
I remember my first impression of one of these rooms as I entered. Everyone was very busy, of course, and the room seemed very crowded. There was Mount Popocatepetl, built up nearly to the ceiling in one corner, one side coming down across the window, and its base spreading around, making one cloakroom door inaccessible. At the other end of the room, the façade of a house with balcony and arcade facing a patio, extended out into the room four or five feet and covered more of the windows. Two tables were put to use by earnest little Americans dressed as "Mexicans," making sombreros and scenery for a play. The other tables and most of the unused

chairs were piled one on another against the inside wall. I was amazed, as I always am when I visit such a school, at the things those industrious youngsters were doing and accomplishing; and I thought, "They could use more space, but that isn't what is wrong. They need more wall space, a place to store those temporarily useless tables. Those windows aren't necessary except for light — these children are too interested in what is going on inside to want to look outside. They will be outside in a few hours."

The "Planet and Stars" unit in another grade did not crowd the windows. The tables were all in use, some for work, others to hold models of planets and their satellites. But the walls were full — maps, drawings, and prints of the heavens and the heavenly bodies. Even the ceiling had its share of diagrams.

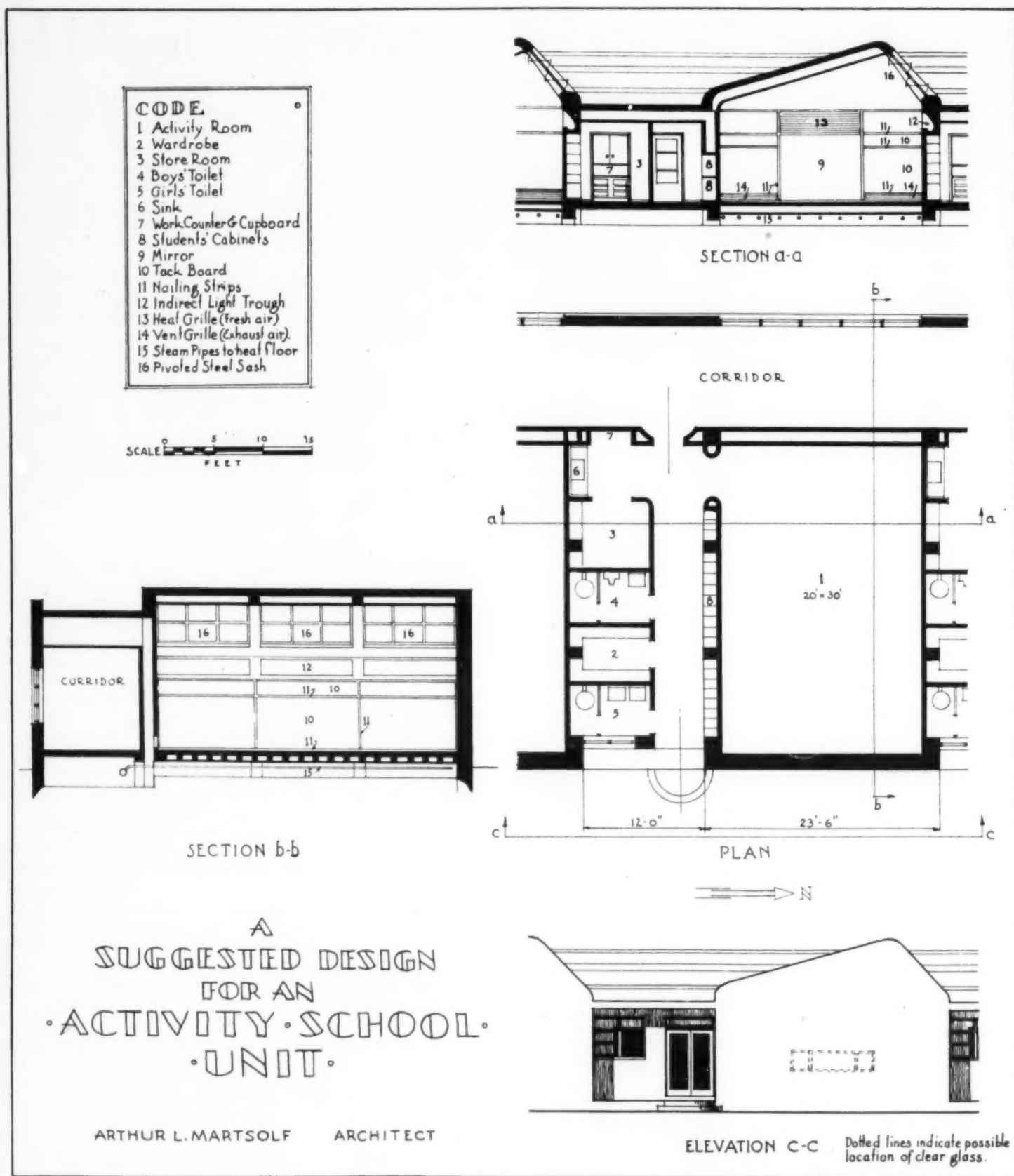
From there I went to a primary grade where the current unit was "The Farm." Here the productions again were large and space-filling, and the tables weren't of much use. I noticed several of the children working on the floor, making animals, wagons, and fences, and that they never sat down. "The floor is too cold," the teacher explained, "although the room air is comfortable. If only we could find a warm floor material that is durable and easily cleaned."

And so I came away from that building as I have come away from others, with a number of things about which to think. Surely it is a part of the architect's job to help his client to obtain a shelter which will function according to his needs, to



A perspective drawing for an Activity School Unit. Mr. Arthur L. Martsolf, architect, St. Louis, Missouri.





give him something more than "just another building."

One cannot hope to design an ideal classroom until one has reached the ideal in educational processes; and one cannot design a classroom to fit all types of processes. There must be certain limiting factors; and when it comes to designing a building for a specific situation there are other limitations immediately imposed

upon the designer—financial, physical, and arithmetical. However, it is worth while to plan idealistically, with as many as possible of the hampering conditions removed.

With this thought I have considered and planned a classroom with these definitions:

1. *Activity type of program*

A program of teaching based on "learning by doing."

2. *Types of rooms in lower and higher grades*

Kindergartens and perhaps first-grade rooms should be larger, should make less demand for wall space, and should have more of the features of a home than a workroom.

It is assumed that above the sixth grade there are special rooms for the different

(Concluded on page 105)



# How Much Light for Schoolrooms?

R. H. F. Halsey<sup>1</sup>

The question of how much light is required in the various parts of a schoolhouse is one that is receiving much more attention from the commercial interests that generate and sell electric current and manufacture and sell electric-lighting appliances than from the taxpayers who pay for these things.

It is rare to find in any of the magazine articles, proceedings of technical societies, and papers of various kinds on this subject any reference to or data on the cost of the required current for recommended higher intensities of artificial light or the initial maintenance and operation costs of recommended electric-light appliances. It seems to be taken for granted that the taxpayer has a great plenty of money and can pay, pay, pay. There are numerous general statements to the effect that higher artificial light intensities in schoolhouses will save the taxpayers' money by preventing "repeaters" caused by alleged poor lighting, but none of these statements is supported by definite proofs or data.

It is, therefore, pertinent at this time to approach the subject from the viewpoint of the man who has to pay, that is, the taxpayer. Government is today called upon to render many more services to the public than it ever has in the past and as a result taxes have risen to a point where they are bearing very heavily on the taxpayer. The time has arrived when we must count the cost and determine if it is necessary or worth while before indulging in any further spending of public money.

Let us then take up the subject of the amount of light needed in the various parts of a schoolhouse. In June, 1924, the American Engineering Standards Committee approved a "Code of Lighting School Buildings" that had been prepared under the joint sponsorship of the Illuminating Engineering Society and the American Institute of Architects. In September, 1932, this code was revised under the same sponsorship and was approved by the American Standards Association as "Standards of School Lighting." An unsuccessful attempt was made at that time by the illuminating engineers to increase the recommended minimum intensities of light. In 1937 the same sponsorship proposed to revise the "Standards" adopted in 1932 and to materially increase the recommended minimum light intensities.

The following tabulation gives the recommended minimum light intensities, in terms of foot-candles, for the various parts of a schoolhouse taken from the aforesaid "Code" and the "Standards."

You will note that there is a considerable increase in the recommended min-

## SCHOOL LIGHTING STANDARDS

Location	Recommended Minimum Light Intensities in Foot-Candles		
	1924 Code	1932 Standard	1937 Standard Proposed
Classroom (on desks and blackboards); study halls, lecture rooms, libraries (on desks and tables) .....	5 f.c.	5 f.c.	15 f.c.
Offices (on desks).....	Not given	Not given	15 f.c.
Sewing rooms, drafting rooms, art rooms, and other rooms where fine detail work is to be done (on the work).....	8 f.c.	8 f.c.	25 f.c.
Shops and laboratories (on the work).....	5 f.c.	5 f.c.	15 f.c.
Gymnasium, main exercising floor, wrestling, playgrounds, swimming pools, basketball, handball and boxing.....	3 f.c.	3 f.c.	15 f.c.
Auditoriums, assembly rooms, cafeterias and other similar rooms not used for study.....	2 f.c.	2 f.c.	6 f.c.
Locker rooms, corridors, stairs, passageways and toilets .....	1 f.c.	1 f.c.	4 f.c.
Sight-saving rooms (on desks and blackboards)...	Not given	Not given	30 f.c.

imum light intensities in the column headed "1937 Standard Proposed." It is approximately an average increase of 200 per cent over the 1932 "Standard." You may say that this may be the result of experience since 1932 and therefore necessary and desirable. It may be, but it probably is not. The proposed increases were suggested by illuminating engineers who are necessarily connected in one way or another with the commercial side of the electrical industry. The supporting data submitted for these increases has a distinctly commercial tinge. Most of the tests quoted were made either by or in conjunction with illuminating engineers. Where ophthalmologists entered at all, they seem to have followed the lead of the engineers. None of them apparently concerned himself with the added cost to the taxpayers. This factor did not receive the consideration it deserves.

To members of boards of education, school committees, and public-school officials who have to struggle with the initial cost of schoolhouses and the annual maintenance and operation budget, and to the taxpayer who has to pay for the schoolhouse and its maintenance and operation the problem is to find out what are the lowest intensities of properly distributed and diffused artificial light that can be used in the various parts of a schoolhouse to provide conditions for correct visual acuity and prevent deleterious effects on the eyes of the users of the schoolhouse. The matter has not yet been approached from that angle.

Now let us consider who are the proper people to find the solution of this problem. I go to an oculist when my eyes need attention. Why don't I go to an optometrist? Because the oculist does not sell eyeglasses or lenses and, if I don't need them, he will not prescribe them. The

optometrist sells eyeglasses and lenses; that is his business. If he makes an eye examination, he generally sells the patient (or customer) new eye glasses or at least new lenses. If he does not, there is usually no compensation for his examination.

If you want to find out how much meat you should eat to get or maintain good health or how much beer you can drink with the same object in view, you would not ask advice from someone connected with the meat-packing or the brewing industries. You would go to a competent physician or dietitian who did not sell these things. In other words you would want the advice without any commercial tinge in it.

So, if we want disinterested objective research made to determine the answer to the stated problem, we must go to some competent authorities who are capable of making the required research and who have nothing to sell us as a result of their work.

Who are the competent authorities in this case? Two professions must be included: Ophthalmologists, to observe and record the physiological effects of different light intensities on the eyes of pupils; and educators trained and experienced in research work, to observe and record the psychological effects of different light intensities on the pupils and the effect on their work. An accountant would be valuable to compute cost of current and appliances and an engineer to look after the supply, distribution, and diffusion of the artificial light.

A group, let us say, of three ophthalmologists, three educators, an engineer and an accountant can, if given sufficient time and proper equipment, determine what are the lowest intensities of properly distributed and diffused artificial light that can be used in the various parts of a schoolhouse

<sup>1</sup>Deputy Superintendent of School Buildings, Retired, of New York City.

to provide conditions for correct visual acuity and prevent deleterious effects on the eyes of the users of the schoolhouse. Such a group can approach the problem objectively and that is a major requirement in the solution of the problem.

The illuminating engineer is needed only to engineer the supply, distribution, and diffusion of light. When he goes beyond that, he generally, by reason of his employment and business connections, approaches the problems subjectively, and then we are likely to get sales talk instead of scientific research. I have no animosity against the illuminating engineer. I know many in this fine profession and like most of those that I know or have met. They fill a very important place in the present industrial world and have brought about very great advances in their field. The determination of the intensities of light required in our schoolhouses is the field of the educator and the ophthalmologist and not that of the illuminating engineer. The problems of the supply, distribution, and diffusion of the light belong to the illuminating engineer. Unfortunately the commercial side of the industry has tempted him into a field where he does not belong.

It is probable that there are in the United States today many schoolhouses in which the artificial lighting is very poor. There are also very many schoolhouses in which the artificial lighting in the classrooms is not at the 15 foot-candles proposed in the 1937 recommendations but is nevertheless considered good and sufficient by the educators in charge of them. I do not know what the proper intensities of light should be. I think that no one knows, and that it still remains to be determined by proper scientific research. I do know that many schoolhouses have 8 foot-candles on the desks in classrooms without poor results in the work of the pupils and without eyestrain in the pupils' eyes.

I find that I can work with great eye comfort when I have a range of from 8 to 10 foot-candles on my desk and on my reading stand. I have just finished reading two volumes of about nine-hundred pages each, printed in 9-point type with numerous footnotes in 6-point type. I have often read many hours at a time and far into the night. With the 8 to 10 range of foot-candles on the book I have had no difficulty in seeing clearly nor is there any evidence of eyestrain. This raises a question in my mind as to the need of any higher light intensities in schoolhouses.

There is at present a great deal of propaganda for higher light intensities in schoolhouses. I have just read an article in a daily newspaper telling of a group of illuminating engineers who have conducted a so-called research for a board of education and have recommended a change from the 8-foot candles to the foot-candles given in the proposed 1937 "Standard." They also recommend a change in the colors of classroom walls and ceilings from the light ivory and cream colors which were originally chosen for their high light-reflection

values to grays, greens, and blues which have generally one third less light-reflection values than the original colors and will therefore require higher powered lights to produce the same light intensity on the desks. The subjective sales angle is here quite obvious.

As an architect specializing in schoolhouses I have listened to sales talk about the various materials used in the construction and equipment of schoolhouses for very many years. This experience has taught me to recognize sales talk in whatever guise it is put forth. I am perfectly familiar with the method of offering free service of various kinds, particularly research work. It is never free—it always has to be paid for, usually indirectly.

Commercial concerns never do something for nothing. They cannot afford to. They are in business to make money. That is perfectly legal and also moral. When they render any so-called free service, it is for the purpose of making sales. The cost of the "free service" is added to the selling cost of whatever they are selling, and the ultimate consumer pays it. You never get something for nothing.

In a matter so important as the artificial lighting of schoolhouses we should not be dependent on research work that is financed by any commercial concern, group of concerns, or organizations sustained in whole or in part by any commercial concern or concerns.

Scientific research work to determine the correct intensities of light for the various parts of a schoolhouse should be carried on under the direction of an educational or research institution or an organization that is not subsidized, either in whole or in part, by any commercial interest or person connected in any way with the industries that supply electric current or appliances. The results of disinterested research on this problem carried on by such an institution or organization are the only ones that should be accepted by boards of education, school committees, public-school officials and the taxpaying public.

The public-school official who is paid by the taxpayer owes it to his employers to spend their money judiciously and with due regard to real economy; not to be influenced by sales talk in whatever guise it is offered, and to buy no more of anything required for the construction, maintenance, and operation of schoolhouses than is really necessary to properly carry on the work of the school. The members of boards of education and school committees who usually serve without pay are under the same obligation to the taxpaying public whom they serve as the salaried public-school official.

I have not been able to get any definite data on the aggregate amount of electric current consumed by artificial lighting of schoolhouses in the United States. It does not appear that these data have ever been collected. The amount, however, must be very large. If we now increase the min-

imum light intensity from 8-foot candles (which I think we may for this purpose take as the general average) to the recommended 15 foot-candles one does not have to be a mathematician to visualize the great increase in the amount of electric current that will be sold by the public utility companies and paid for by the taxpayers.

Nor is this all. There will be indirectly another result. If Johnnie and Susie Jones have 15 foot-candle intensity of light on their desks in school, they will very probably grumble about doing their homework at home with only 6 or 8 foot-candles of light, because they have become accustomed to the higher light intensity in school. They will want to know why they cannot have as high a light at home as they have in school.

Mr. Jones, Sr., who is probably struggling along under an ever increasing load of taxes with probably also a reduced income, knows that he can read very well with a light of 6 or 8 foot-candles and that in his early years he had even less than that with oil lamps or gas and his eyes are still good, cannot understand the reason for this demand for higher light. (If he reads this article, it may throw some light on the subject for him.) He may also wonder if Abraham Lincoln had a light intensity of 15 foot-candles on his book when he was reading by the light of an open fire in the fireplace.

But if Jones Sr. is convinced, as many fathers will be, that higher light intensities are really necessary and proceeds to provide them, then there will be another large aggregate increase in the consumption of electric current and the purchase of electric appliances.

It is evident that the financial returns to the electric industry will be very large if it succeeds in convincing us that we need a light intensity of 15 foot-candles on the desks in schoolhouses. The money that it has invested in propaganda under the guise of "free research service" will bring in very ample returns. For the taxpayer, whether he pays directly or indirectly, it means digging deeper into his already nearly empty pocket for something which he may not and probably does not need at all.

Should the public schools of the nation lend themselves to this? Would it not be wiser to say, "No, wait a bit. We will have a real scientific research made, without any commercial influence, to determine just how much light we need in schoolhouses." Then go right ahead and do it. It will pay well to do so.

Here is a challenge for one of the educational foundations or a university that is well equipped for scientific research to take up this problem and find the solution. It is a much more important problem than many of the problems that are now engaging school-research attention because it affects millions of pupils, millions of taxpayers, and many thousands of teachers. I sincerely hope that one of them will accept the challenge.



# Some Blunders in School-Building Planning

H. W. Schmidt<sup>1</sup>

The writer, for some time, has felt that some statements setting forth his experience with and observations of school-building matters may be both of interest and profitable to the reader. This article is based upon some twenty years of experience in the school-building field and contains field observations and those gained in checking plans and specifications of hundreds of new school buildings. All comments are founded upon factual material and observations, and no apologies are offered in presenting them, peculiar as some may appear.

It is to be understood, however, that the writer is not presenting this article in the spirit of carping criticism or that his attitude is iconoclastic. On the contrary, it is hoped that the material presented may be conceived as constructive and prevent others from making similar or worse mistakes — as errors or the “negative” side of school-building planning will be the only ones considered here.

One may now immediately jump to a conclusion and take the offensive in that the reasons underlying criticisms are probably subjective and thus open to argument or reinterpretation; that we are not all agreed upon what is correct or standard or generally fitting. Thus what may be criticized or considered as improper may after all, and in the opinion of the original designer, be correct and not at all in error.

Agreed. The element of doubt as to the intention of the designer is and must be present in the very nature of such an article. Yet the writer has had a great deal of experience along these lines and has fortified himself with those standards which are generally accepted as fundamental to his statements. As we all live in glass houses it has been the intention to cast as few stones as possible, particularly those which may become boomerangs. The reader must judge whether the writer's attitude is a helpful one or whether he is merely indulging in some surreptitious sniping. It is to be stated here emphatically that all cases cited are based upon copious notes taken at the time of observation and also upon sketches taken directly from plans. Maybe 'tis that some of these citations are errors pure and simple; maybe they were not considered such at the time or are not at present. *Quien sabe?* In any event these matters as presented may be both interesting and instructive and prevent some of the readers from making similar errors (?) — if so, the time and effort spent in writing this brief article have been well worth while.

## Space Utilization

One of the interesting features connected with a study of school plans is the

<sup>1</sup>Supervisor of Buildings, Wisconsin State Department of Public Instruction, Madison, Wis.

general space relations. Maybe the reader does not believe in the N.E.A. “Candle of Efficiency”; at the same time one may question the efficiency, over all, of a school building whose total floor area contains but 42 per cent instructional space and whose *usable* cubage is only 39 per cent. Another instance showed that of a total *basement* floor area of 5,497 square feet, the “unassigned” areas constituted 4,083 square feet, or nearly 70 per cent of the total basement area. If the reader had seen the layout, he would probably have changed “unassigned” to “waste,” and if he had calculated the number of cubic feet involved, at so-and-so-much per cubic foot, he would have “lain himself doon to dee.” Why plan for space whose use is either questionable, problematic, or which cannot be utilized?

On the other hand innumerable plans have checked with large space utilization and one actually showed 69 per cent of instructional space. Good? Not at all. Everything was evidently skimmed to make a showing here to the neglect of necessary auxiliaries. That building was *not planned well* as a whole. Everything was sacrificed to an idea — but the idea would not stand the test of application. At the same time it will probably be found that any building which shows around 55 to 58 per cent of instructional space is very well planned, *provided* the auxiliaries have not been neglected. The proof of this pudding lies in the fact that quite a number of such buildings, after erection, have been designated as good by their occupants, while several of the other order have shown weaknesses and have been criticized as defective.

The writer will not go into such matters as flexibility, arrangement to meet curricular or administrative needs, “traffic” arrangements, types and kinds of auxiliary spaces, and other elements of this nature; one could write a book on these alone. But it may not come amiss to briefly mention a few such matters which have more or less intruded themselves when studying school plans or visiting schools.

## Storage and Work Spaces

Among those most frequently found is lack of storage space for both educational and custodial supplies. A certain twenty-room building did not have an inch of storage space outside of that provided for each teacher in her room. After occupancy, two classrooms had to be ruined as to size, in order to provide space for educational supplies, textbooks, etc. Too frequently one of those “unassigned” basement spaces is given over to storage — that seems to be the case of last resort, and few are suitable for this purpose. We find such rooms without light, heat, or ventilation; damp quarters are frequently observed and access is

often through labyrinthian basement passages with rooms far removed from ready access. A recent visit disclosed a storeroom for heavy supplies located nearly eighty feet from the service door with intervening six-riser stairs. Yet space immediately adjacent to the entrance could have been made available with a little judicious planning. Maybe it would pay to plan for the housing of supplies whose value often runs into thousands of dollars! A beautiful case of mildew among school textbooks was observed some time ago, due to improper storage facilities. A biologist would have had a good time playing around with the fungi, while the administrator probably cursed the designer.

Another pet peeve with a good many people is the lack of space for the engineers, janitors, and custodial force. Have you ever seen a perfectly useless understair space given over to housing these people, or a rather wide plumbing space or alley, or a triangle in some corner of a “skewed” building, or a hole in some obscure corner of a basement? Of course you have if you have been around some, and so has the writer — too often. If a part of a boiler room is given over to the engineer for a small workbench, he often considers himself lucky. Are not these people deserving of proper consideration to say nothing of permitting them to use their talents for the benefit of the school by providing them with a good work space and equipment? On the other side of the picture, some plans have made splendid provisions in this respect, and as time goes on we shall likely find more of this.

While speaking of boiler rooms, how about setting boilers so that tubes may not be removed or cleaned? Several weeks ago five-jointed cleaning tools were found in a school, as those were the only ones that could be used due to a restricted space. Plan after plan has been checked where this lack of space has been found. One boiler room was “surrounded” by 16-in. concrete walls and a 6-in. concrete deck for a ceiling; yet within a few years an additional boiler is called for to serve a new building section. No slip joint, no provisions for getting in another large boiler except to break out the rear concrete wall or destroy about half of the deck. Must be an error!

## Heating and Ventilation Areas

The matter of insufficient space for heating and ventilating equipment is very much in evidence in school buildings, large and small. For instance, a furnace was set in a space 6 ft. 8 in. by 10 ft. 6 in.; the heater jacket was 64 in. in diameter. After the duct work was installed, a small access door 1 ft. 6 in. by 2 ft. was cut in the curtain wall — and that was the entrance to the rear of the furnace space. The firing

space was exactly 4 ft. in length. Rather close work, one would say. Such examples are very common.

Then there is the classic example of mounting an auxiliary fuel-oil tank of 10-gallons capacity *directly* over the furnace bonnet, within 6 inches of its top. And still better (or worse?) where in one rural school septic toilet tanks were to be installed directly over the furnace, leaving about one foot between the bottom of tank and furnace top. It actually took some time and argument, *followed by a mandate*, to convince (?) the designer that he was, well let us say, wrong. One is not sure yet whether *he* felt he was off the beaten path of good design.

How often do you tear the buttons off your coats or worse, trying to get into a plenum chamber or into an air intake set in such narrow quarters; or find the blower

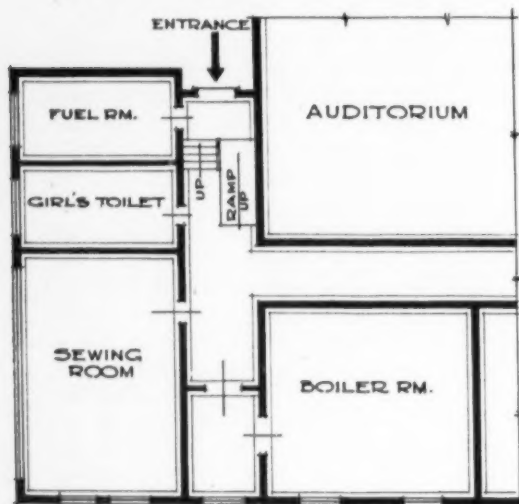


Fig. 1

motor and its belt located so that it is actually dangerous to get to them for oiling or other purposes.

Then we have the case of a fuel room opening off the side of the boiler room, in fact almost the rear as regards boiler setting, so that the coal dolly had to be wheeled 43 feet (scaled) to the stoker hopper. Wonder what the fireman thought, or would say if he got onto that job. By the way, it was checked and corrected before the building was started. But we still have plenty of examples of coaling at the front of school buildings. Only recently the writer was in a kindergarten whose terrace opened onto four coal holes. Need more be said. How about Figure 1? This anomaly was discovered about a year ago in a visit to a building erected about 1925, but even "so long ago" better things might have been expected. The setup was only recently changed.

Another practically bothersome scheme is to make a classroom corridor a spectator's gallery for a gymnasium. The writer may be pardoned for considering this scheme an unmitigated nuisance. If a gymnasium is to be of any use, it should be in active service all day long and not after school only. The argument made, of course, is that of space economy, low cost

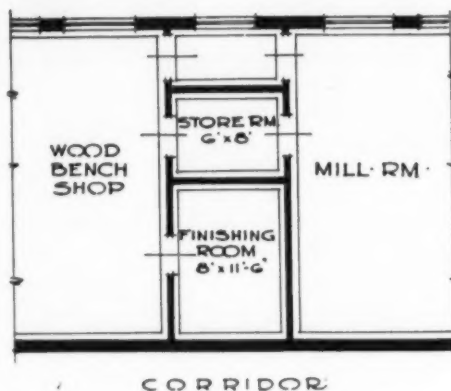


Fig. 2

of the building, and "sound-proof doors and windows" closing off the corridor. Again observation shows that practically these arguments are of little value when the building is in use. Doors are not sound-proof, they are expensive, they get out of order, and generally they are left open or up. As the corridors are level, how many rows of spectators may be accommodated? Let the designer look into this situation carefully before committing himself to this scheme. No matter how carefully the board or administrator is told about the shortcomings of it—later, the designer will inevitably be blamed. The writer has on many occasions attempted to protect the designer when the latter has been working along this line at the *behest* of the board or others, designing some features contrary to his experience or wishes; but in the long run *he* will be blamed, frequently unjustly, but blamed nevertheless. Recently a designer refused to carry out a scheme presented by a school board as he felt that it would lead to thorough dissatisfaction later. He lost the contract rather than design something he could not back up. There are too few architects of his type.

### Shop and Home-Economics Planning

Before leaving the basement, let us look into the shop and other similar spaces. Why are such rooms relegated to the basement? Oh, we know all the stock answers, but how valid are they? Is it not about time that we think of these activities, home economics, industrial arts, drawing, agriculture, etc., in terms of defensible, regular school subjects? We would not think of

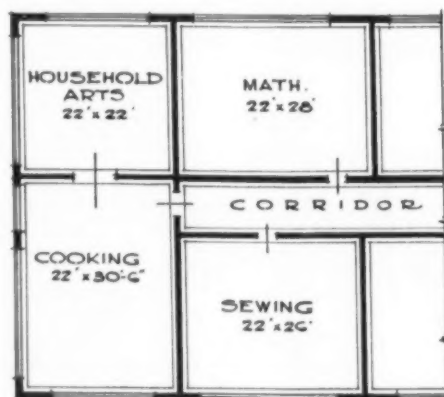


Fig. 3

placing academic classrooms in the basement, or there would be a prolonged outcry all along the line. Too frequently "unassigned" spaces are later found to house these "special" subjects. We then find inadequately lighted rooms, low ceilings (7 ft. 10 in., in one case), damp floors, etc. One plan showed a battery of wood-turning lathes with their countershafts hung from a thin concrete-slab ceiling forming the floor of several classrooms. That will inevitably give rise to an intolerable situation later. Lack of provisions for shaving exhausters or dust collectors is very common, and a forge shop under part of a main corridor was also a bit of a joke. In the vernacular, why a basement anyhow? We are slowly discarding the idea that a basement is necessary. Once a basement always a basement? Let us hope not.

A large shop layout with its *interesting* auxiliary rooms is shown in Figure 2. No comments are necessary if the reader will study the plan; thorough study is not even needed to show the ridiculousness of the relative space arrangement. Figure 3 shows a home-economics department in a building housing over 800 students. The inadequacy of all rooms, lack of storage space, fitting rooms and pantry is self-evident. Maybe the girls have no desire for this work here, but this is doubted. We shall put it down as just another error.

Swimming pools are often designed with, apparently, little regard for those factors which seem to most designers important—location, the necessity for sunlight, ample air space, moisture-resisting trim, and ample ventilation. We find them located underground without any daylighting or with north-window exposure so as to be sure not to let in any sunlight. One swimming-pool room had wood trim, and there were found fungi growths  $\frac{3}{8}$  in. thick by actual measurement, around parts of the window trim. By the way, the windows had never been opened, couldn't be as a matter of fact. How does Figure 4 appeal to you? That pool was located under permanent gymnasium bleachers. Do you like it?

### Gymnasium Plans

Now let us get out of the basement for a while and see what we can find upstairs. Here is a gymnasium with showers and locker rooms under permanent bleachers (Fig. 5). The drawing must speak for itself; fortunately the designer left the location and disposition of the showers to a later period and thus the reader may exercise his imagination in this respect *ad lib*. It will be good exercise. Both sides of the gym were the same. Another gymnasium has a bleacher balcony of concrete construction with "steps" 20 in. in height running the full length of the gym, 80 ft. long, without intermediate steps either in the center or at the ends. One simply climbs, if he can, and in case of a panic or hurried exit—well, one hardly cares to visualize that. Is this a mistake too, or—? See Figure 6.

Then we have permanent bleachers



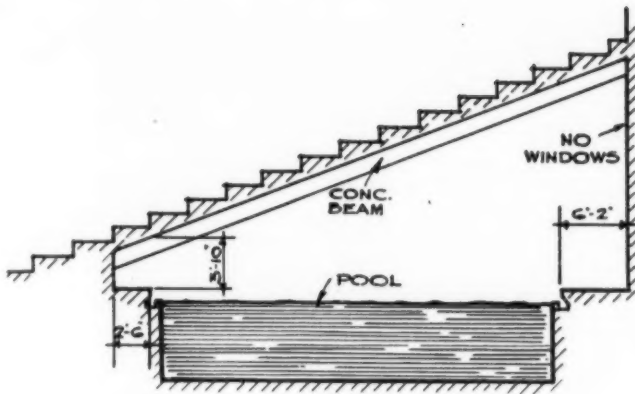


Fig. 4

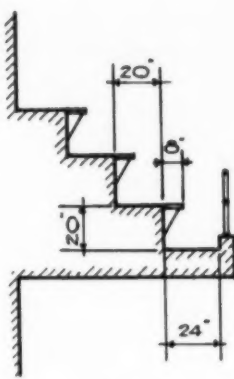


Fig. 6

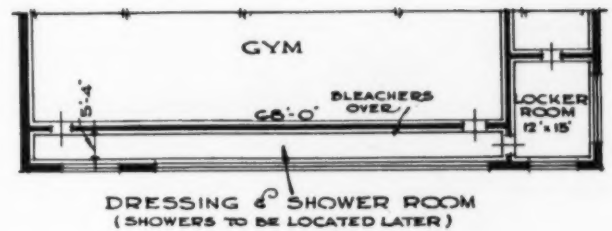


Fig. 5

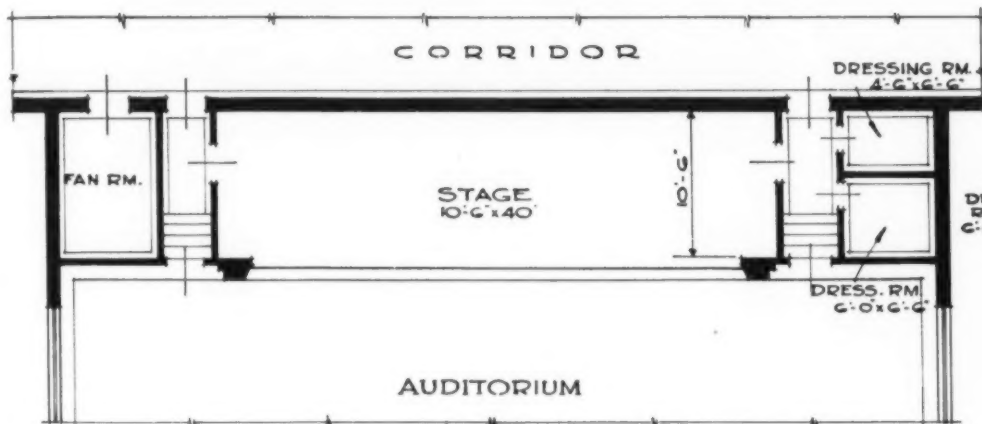


Fig. 9

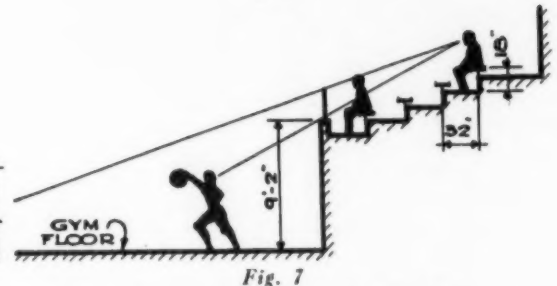


Fig. 7

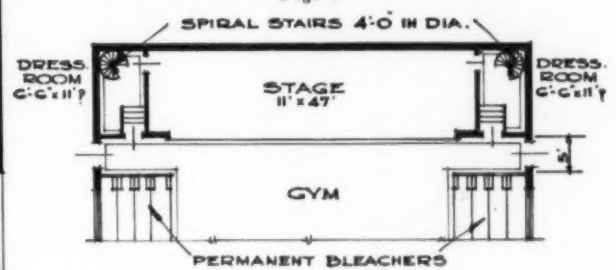


Fig. 8

which are designed so "flat" and high above the playing floor that nearly half of the playing floor is not visible to the spectators (Fig. 7). Another gymnasium has a stage only 11 ft. in depth, but with a proscenium opening 47 ft. in width and dressing rooms 6 ft. wide with spiral staircases to the underworld of showers and lockers (Fig. 8). You know these latter are nearly always placed in some corner or in a basement or underground passage not good for anything except showers. But one of the best examples of how not to plan is shown in Figure 9, which must speak for itself. Evidently a stage and accessory rooms must be provided at all costs (?) and so we have this result.

Then there is Figure 10 which shows that in order to reach the shower and

locker rooms students have to pass into the main corridor of the building. It would be undesirable, to say the least.

In connection with the gymnasiums we find too often that the physical-education director has either no quarters at all or is assigned some left-over space or hole stuck under bleachers or off the locker or shower rooms; daylighting does not seem necessary.

#### Errors in Stage Plans

Frequently stage heights are improper, as may be observed from Figure 11, which has a stage height of 62 in. with a level auditorium floor. Sight lines will show what happens when the audience is seated within 10 to 30 ft. of the stage. Many times no provisions are made for a ticket office or booth in connection with spaces used for public performances; triple and quadruple doors, the main entrances to a gymnasium are found directly behind or almost underneath basketball backstops. People are not all on time, and late comers — ?

While we are on stages, we find gridiron spaces too low to permit drops and cycloramas to be hoisted high enough to clear borders; on the other hand, the latter often

have to be hung so low that their strips do not clear the sight lines from the audience seated anywhere near the stage front. We find switchboards with open switches and placed on the left (wrong) side of the stage. For operating reasons the boards need to be placed on the right side (facing the audience) of the stage.

Scenery storage spaces are rarely found either convenient to the stage or large enough to house any size wings or property. One design had the access doors to some space (8 ft. high) over dressing rooms with an iron wall ladder 12 ft. above the stage level and another had some space available for scenery under a rear (low) balcony, so that the scaled distance was just 103 ft. from the stage side to the access door. How about Figure 12? One

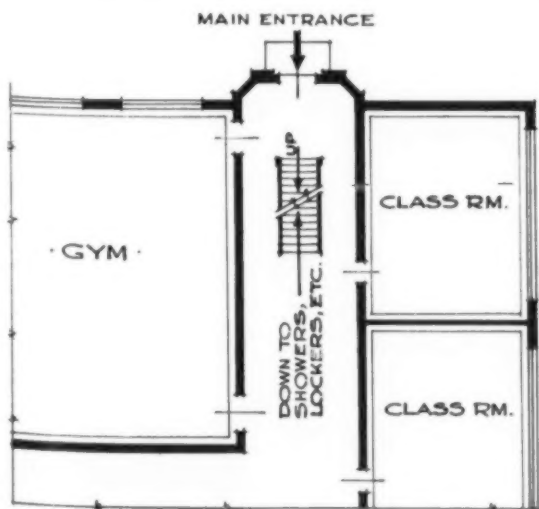


Fig. 10

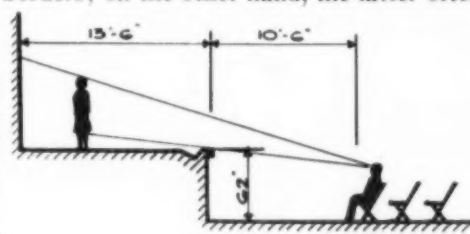


Fig. 11

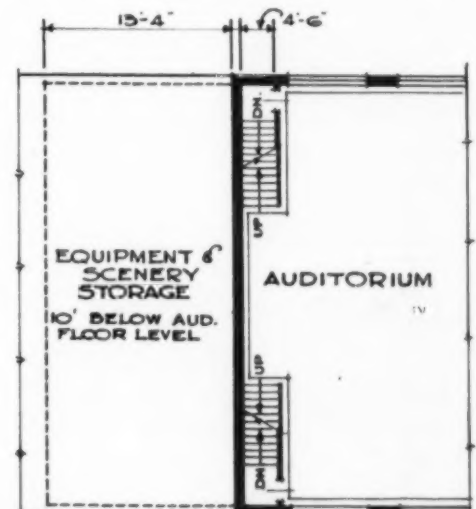


Fig. 12

wonders what the stage hands are going to do in a case of this kind, even if they are students. How many dressing rooms are of such size to accommodate an ordinary stage group or how many are provided with lavatories or toilets or the latter even reasonably accessible if located elsewhere?

### Classroom Planning

Recitation rooms for both elementary and high schools fare better as to planning, but we still find many too small; spaces such as 16 by 23 ft., 18 by 22 ft., and 20 by 24 ft. are common in our high schools. But such rooms are uneconomical in most cases and do not lend themselves readily either to the increasing class sizes or to the modern methods of teaching which often call for group and much reference work.

The writer has before him a plan which has two toilet rooms 22 by 22 ft., each with 8 water closets and 2 lavatories, but the science laboratory is only 22 by 24 ft. and the home-economics department has the same space as the toilets. And speaking of space relations, there is one large cosmopolitan high school in which the space relations of academic classrooms to "special activities" is 28.9 to 71.1 and this does not include library, auditorium, or gymnasiums, of which there are two. Unless the secondary program is *very badly skewed*, this building could not accommodate the curriculum of any school known to the writer. By the way, this was not a *special* school—it just appeared as if "vested" school interests had run riot; probably had.

Much attention is given by designers to both natural and artificial lighting, but we still find blackboards between windows, and windows so disposed as to produce glare on front boards. One large elementary school, recently completed, has its classroom windows 23 in. from the floor. With snow on the ground, the writer tested the oblique lighting component arriving at the eyes of a pupil sitting near the window and as reflected from the snow. It was 164 foot-candles. And we still talk about eyestrain! We find 48-in. blackboards for pupil use, although children write at eye height and rarely over 12 in. in width. Blackboards 18 in. above the floor for primary grades up to 26 in. for grammar grades were recently found in one set of specifications. To make an architect-

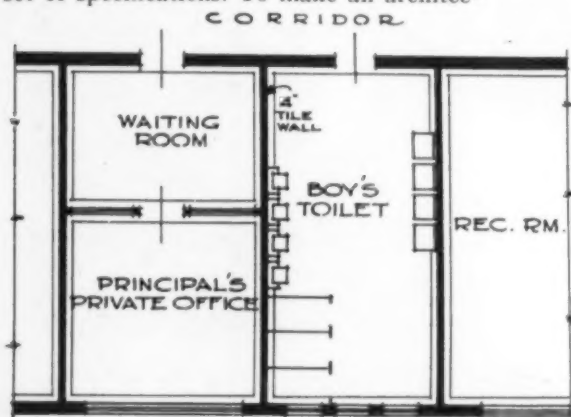


Fig. 14

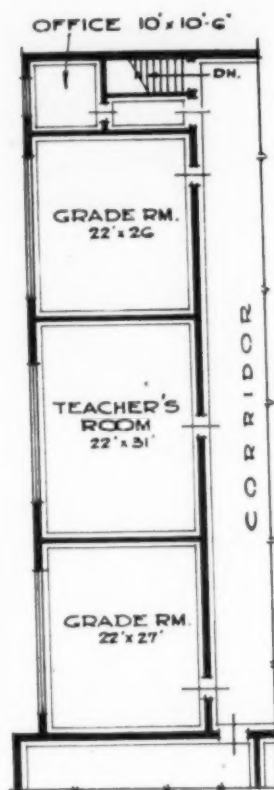


Fig. 13

tural treatment of classrooms, one designer had 4½ in. left at the top of blackboards and filled this in with cork board to be used as a pinning strip—for what?

### Auxiliary Spaces

An interesting arrangement was found in a 16-teacher building (Fig. 13); the teachers' room was 22 by 31 ft. while the grade rooms on either side were 22 by 26 ft. and 22 by 27 ft. respectively, and the office was 10 by 10 ft. The teachers were well taken care of to say the least. One elementary-school building had 12 classrooms each 24 by 32 ft. and a kindergarten 24 by 28 ft. without any storage or work space, toilets or other auxiliary spaces. That community evidently does not believe in kindergartens, or is there something else that is wrong? Another plan (Fig. 14) showed a boys' toilet adjacent to the office with the fixtures hung on a tile wall; no soundproofing and no buffer partition in the room! In another building a sheet-



Fig. 16

metal room was given 20 ft. in length and the adjacent toilets 14 ft in width. One may ask the whys and wherefores of such space disposition (Fig. 15). How do you like the disposition of the lavatories in Figure 16?

We were under the impression that rooms housing similar activities were to be grouped for administrative and other reasons, but in a \$900,000 high school we found biology rooms on separate floors, commercial rooms scattered all over the place, and the library as far removed from the study halls as was physically possible. Maybe there were reasons for this, but it might be difficult to discover them.

But lest the reader become weary, this article ought to be brought to a close. Enough examples of either bad or careless planning have been shown to indicate that much improvement may be made by some designers. School-building planning is a specialty and needs very careful study and experience extending over many years and a knowledge of schoolwork and administration in general as well. It would appear

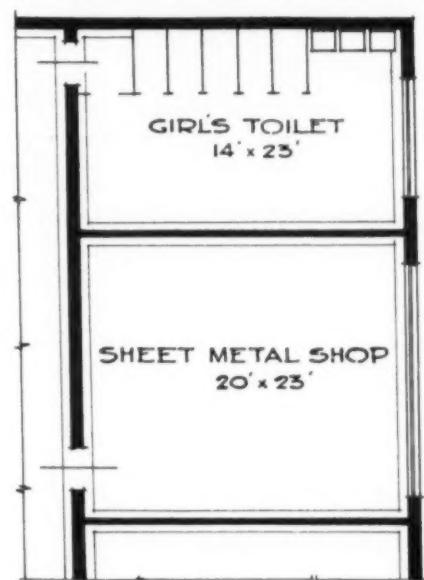
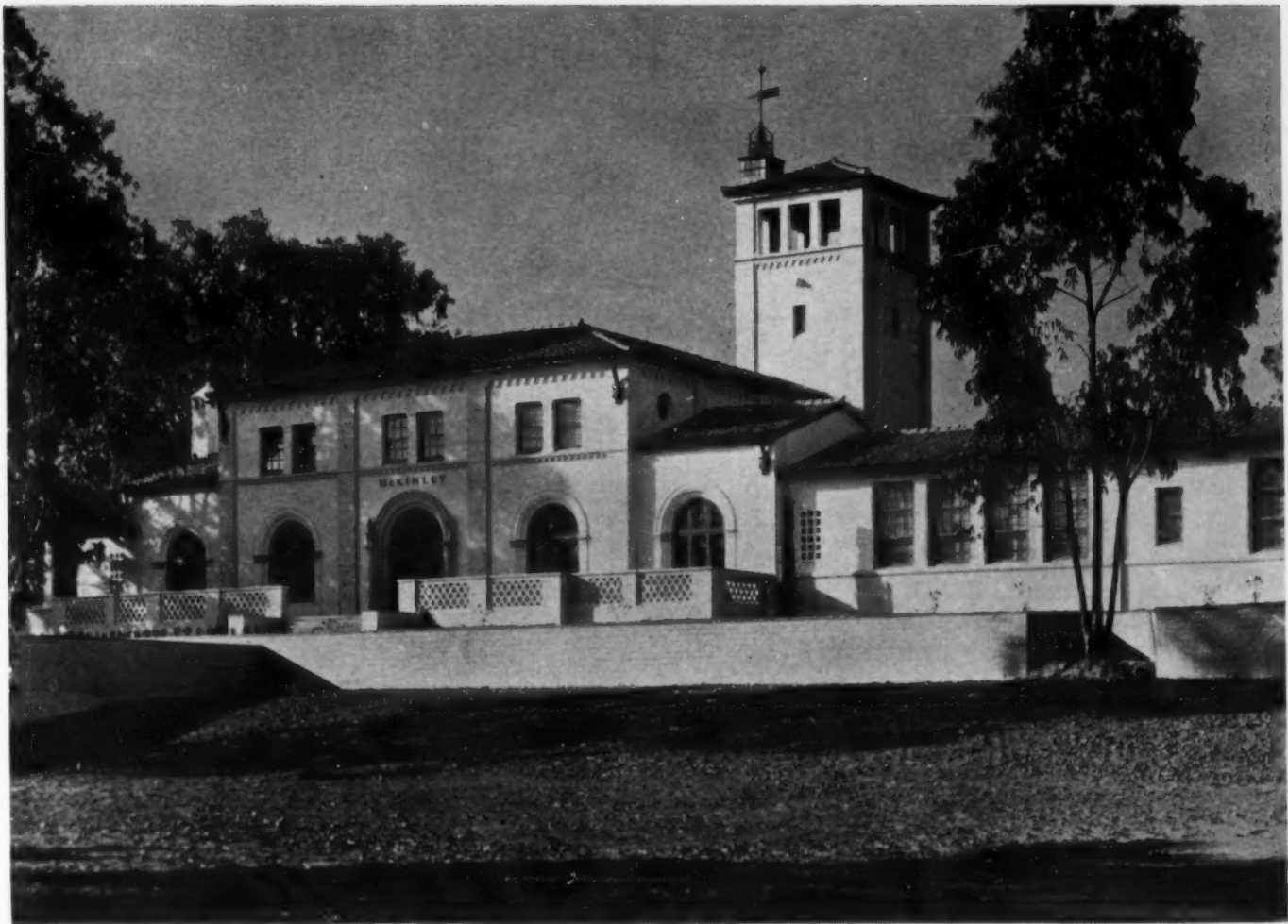


Fig. 15

that some architects tackle such work without sufficient background, otherwise how could one explain the examples cited? Of course the experienced school architect will declare that these examples are exceptional and could not happen in his work. But they are not particularly exceptional, and many of them are the work of good school architects. How about one designer of a good many school buildings specifying one-half-inch insulation board for the ceilings of showers and dressing rooms in one of his buildings?

As stated above, this article is written in the belief that it may serve to bring attention to a few of the hundreds of problems confronting a designer of school buildings to the end that such errors or misjudgments in arrangement or design may not occur in anyone's work. It may also help the beginning school designer to avoid some of the pitfalls of planning. May these statements bear fruit in better planning.





*Main entrance and administrative unit of the McKinley School, Santa Barbara, California.—Winsor Soule & John Frederic Murphy, Architects, Santa Barbara, California. The tower, which provides an interesting architectural feature, serves to conceal a necessarily high chimney and provides space for storage, tanks, etc.*

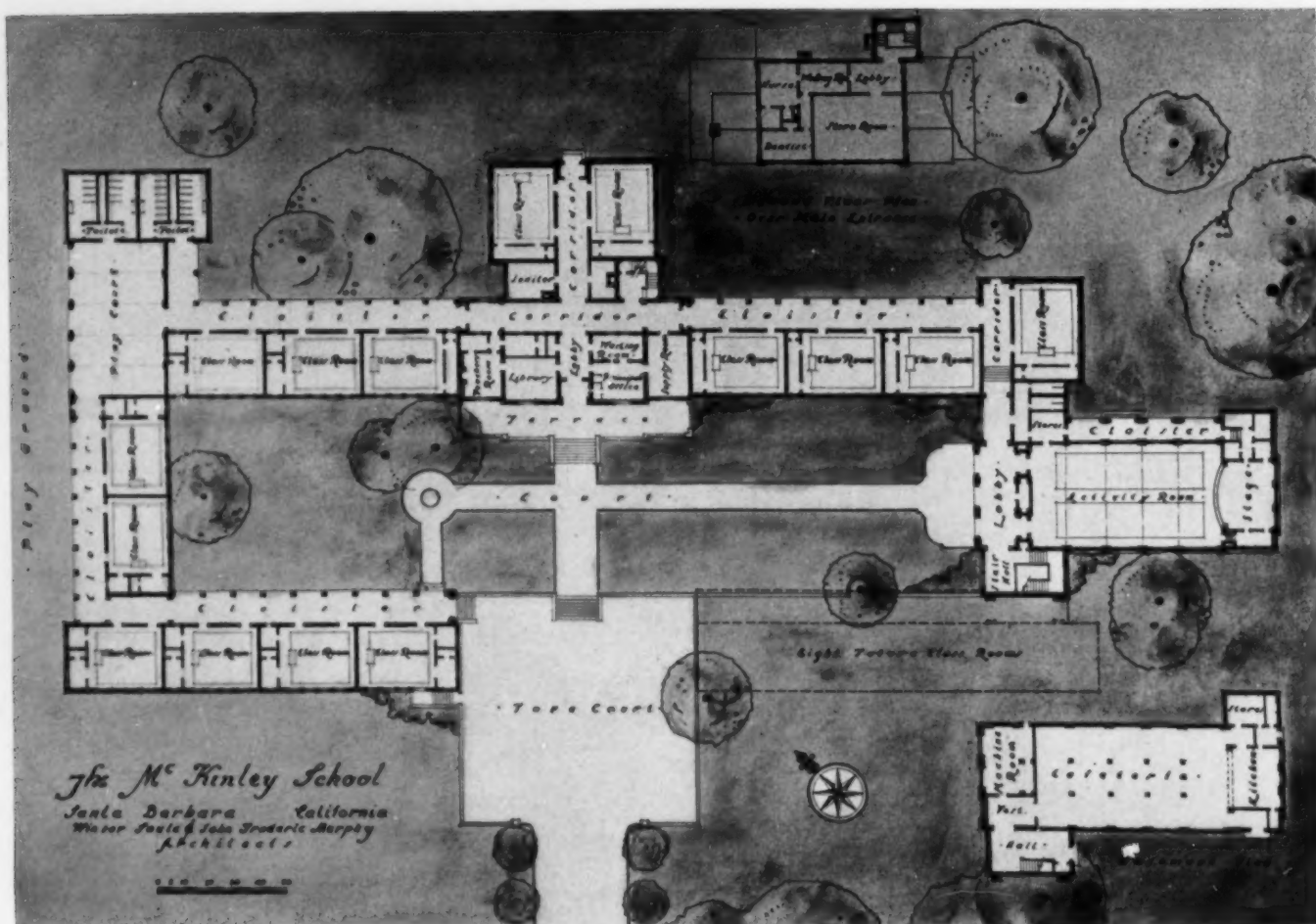
## The McKinley School, Santa Barbara, Calif.

In the design of the McKinley School, Santa Barbara, Calif., two main considerations shaped the thinking of the architects. The community has a long Spanish colonial history and among its architectural gems are buildings erected in the days of the Spanish ranchers and missionaries. The climate, the vegetation, and the whole countryside suggest the appropriateness of the simple, low Spanish type of building with its plain walls and ragged tile roofs. No style could more readily express the educational character of a school building, its solid, fireproof construction, and its adjustment to the joyous, man-building service to a growing generation.

The building straddles a sharp ridge, which runs across the site from north to south and which is thickly studded with pines and eucalyptus trees. The main axis of the building runs approximately parallel with the ridge so that a minimum of excavation was necessary. The plan is long



*The auditorium entrance, McKinley School, Santa Barbara, California. The room is planned for a wide variety of school activities which engage large groups of children. The basement is used for cafeteria purposes. The arrangement of the building permits of the separate use of this unit for a wide variety of community purposes.*



*Floor Plans, McKinley School, Santa Barbara, California.—Winsor Soule & John Frederic Murphy, Architects, Santa Barbara, California.*

in the north-south direction and is constructed severely in the east-west direction. The activity room and the most westerly group of classrooms are four feet below the level of the main north and south group of classrooms. The slope of the site has made it possible to arrange entirely above the

ground the cafeteria, which is under the activity room. The boiler room and storage rooms are under the most easterly classrooms in the center of the building.

The color scheme of the building includes the use of soft Spanish white for the walls; light faun for the trim; a light blue-

green for the doors, sash, and other woodwork. The Spanish tile roof is graded from dark brownish-black at the eaves through reds to a deep yellow at the ridge.

The building is planned for elementary classes. It ultimately will be expanded to 25 rooms, enclosing the central court.



*The McKinley School, Santa Barbara, California.—Present pupil capacity, 450; cost of building, \$221,572.54; cost of equipment, \$11,000.00; total cost, \$232,572.54; cost per pupil, \$516.83.*



# San Francisco Faces Trade Training

## The Samuel Gompers Trade School

George G. Mullany<sup>1</sup>

San Francisco's first venture in offering limited instruction to apprentices in trades and industries was inaugurated with the opening on August 16, 1937, of the Samuel Gompers Trade School in a new, four-story fireproof building centrally located. The \$250,000 structure of reinforced concrete was projected by the board of education as a first instructional unit to initiate and supplement instruction in a limited field of crafts with the aid and counsel of journeymen leaders. The board was in unanimous agreement that the school should bear the name of the late Samuel Gompers.

The requirements for admission to the school permit the enrollment of the following types of boys: (1) any boy graduated from a senior high school; (2) any boy over 18 years of age; (3) boys attending high school in the eleventh or twelfth grades, or boys in the continuation school, who receive the recommendation of their respective principals and the director of industrial arts. The principals of high schools may excuse boys from 1 to 5 p.m., one to five days per week to attend the Samuel Gompers Trade School. Credit toward high-school graduation may be granted the boys to the schools in which they are regularly enrolled.

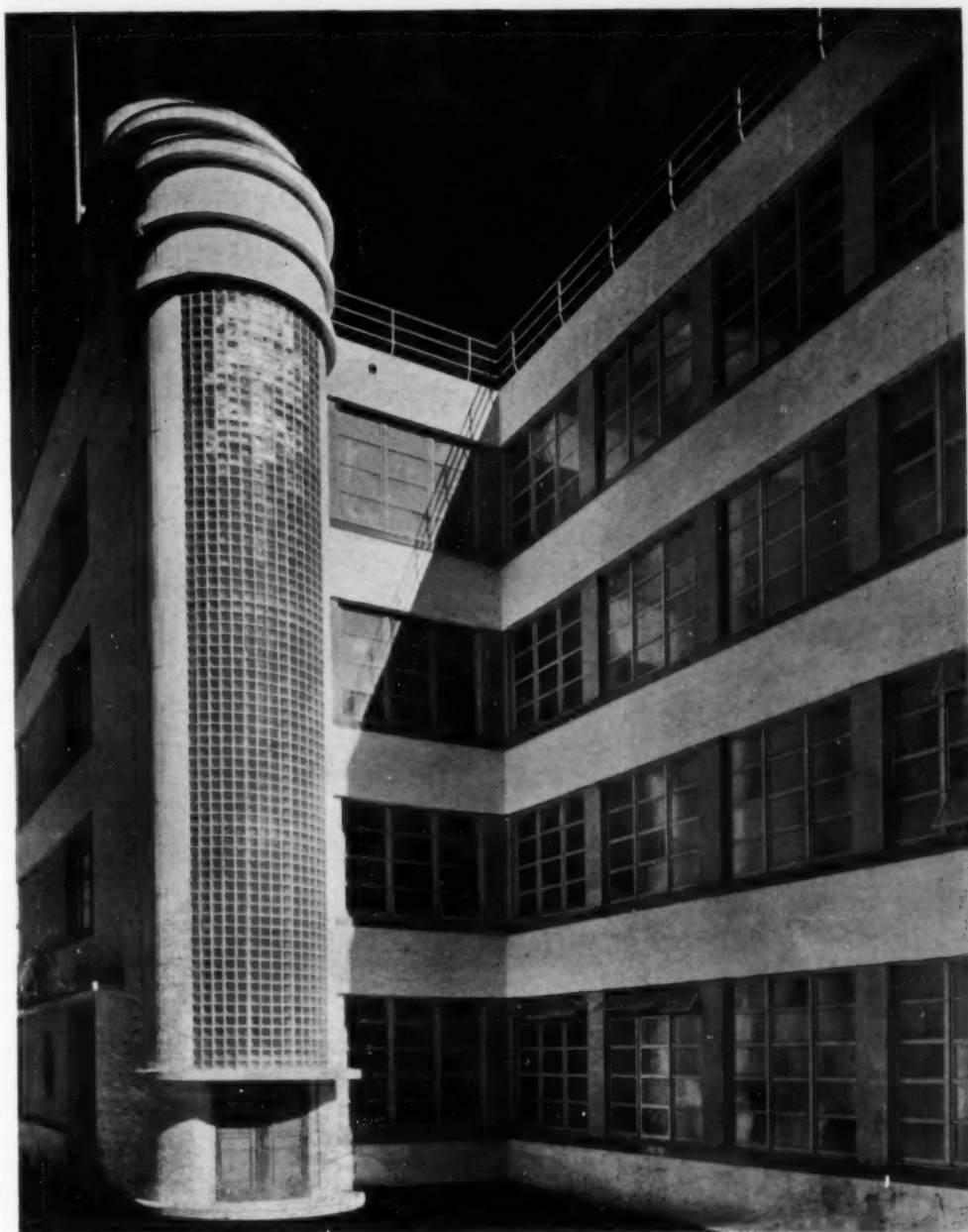
The subject offerings for high-school students are as follows: power station, painting and decorating, metallurgy, steam turbine, drafting and machine mechanics, electricity, welding, diesel, drafting and architecture, mathematics, steel construction and drafting, architectural drawing, telephone operation, radio, electrical drafting, aviation, offset lithography, plumbing, art metal and jewelry design, wood carving, machine shop, automotive shop, navigation, apprentice sheet metal, apprentice painting, steel square, fuels and lubricants, tool and die making.

### Wide Scope of the School

The school is opened for both day and evening instruction. During morning hours it is occupied by students of the San Francisco Junior College for instruction in engineering. The afternoon session from 1 until 5 o'clock is divided into two sections: from 1 to 3 and from 3 to 5 o'clock for high-school pupils who are to receive their academic training during the morning hours. Boys not attending regular high schools may attend the afternoon session, provided they have had sufficient basic training to profit by instruction given in a trades school. High-school graduates and adults who are in need of trade training, are also accepted as students. Apprentices who are engaged in a given trade and who must attend school under the apprentice agreement, are accepted.

The evening session is used for both apprentice-training classes and trade-extension classes. Young men between the ages of 16 and 25 years, who are working at a given trade such as painting, decorating, paper

<sup>1</sup>Director of Publications, Public Schools, San Francisco, Calif.



*A view of the Samuel Gompers Trade School, San Francisco. Stair tower at the left.*

hanging, plumbing, and sheet metal, and whose employers' and employees' groups have set up apprentice-training agreements under the California apprentice-training plan, are trained in the evening classes. The trade-extension work is used to supplement the training of adults actively engaged in a skilled trade during the daytime and who wish to improve themselves.

Instruction is given in the following trades both afternoon and evening: electric welding, acetylene welding, aviation, diesel engines, tool-and-die work, body-and-fender work, industrial electricity, both theory and applied, radio upkeep and repair, mechanical drafting, architectural drafting, applied mathematics, art metal and jewelry work, leveling and surveying, labor economics, and social problems.

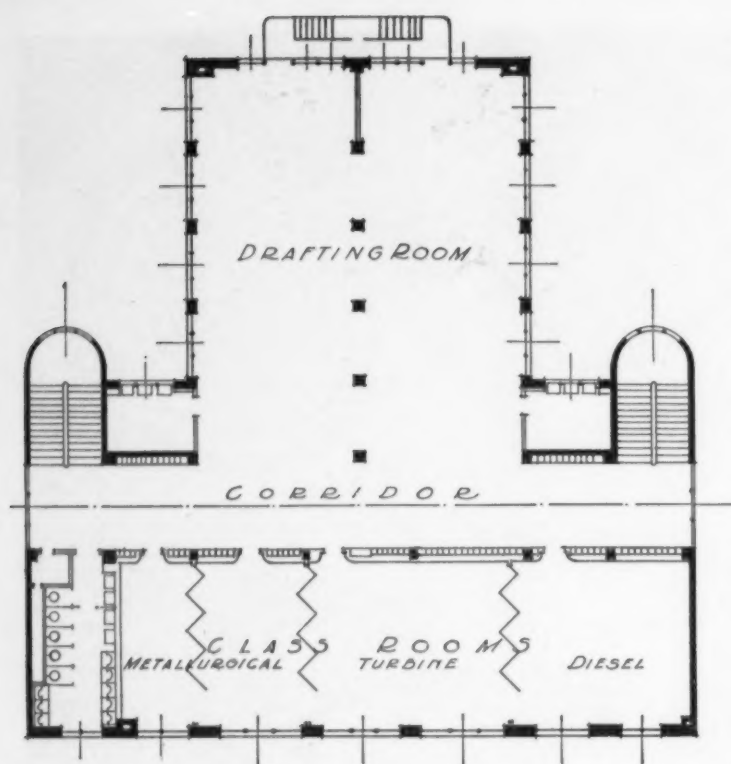
### The Building

The Samuel Gompers building is designed in the modernistic type of architecture. Through economy of corridor space, the floor area for classrooms is exceedingly large in comparison with standard school construction. The building is of the factory type; the floor plan is a huge letter "T," the stem of the

letter housing identical classrooms on the first and second floors, and large laboratories on the third and fourth floors. The bar of the "T" is divided into laboratories.

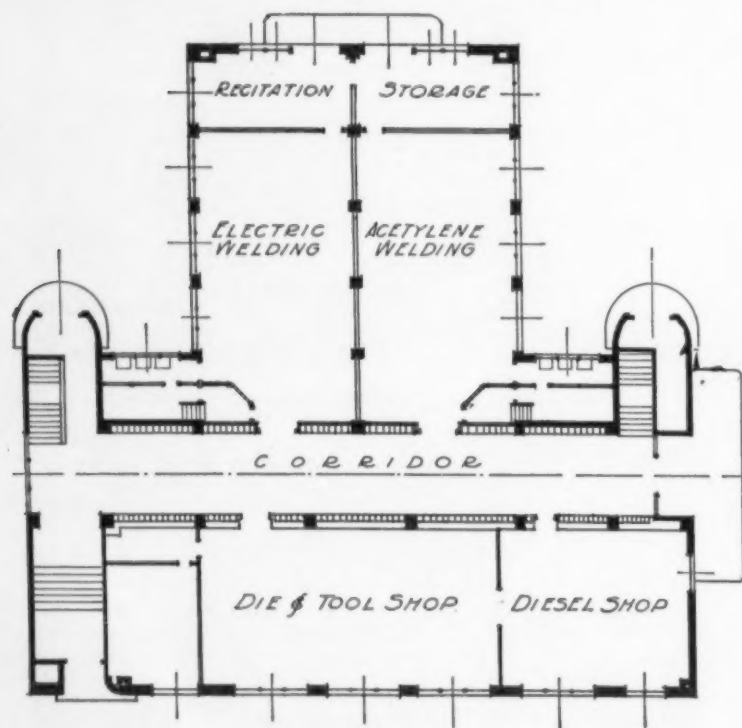
On the first floor a diesel-engine laboratory is located. The tool-and-die shop on this floor is fully equipped, and the students have access to the most modern precision tools and measuring apparatus. In conjunction with the tool-and-die shop is a heat-treating laboratory where there have been installed complete electrical furnaces for hardening and tempering steel, for drawing steel, and for heat-treating high-speed steel. Accurate laboratory instruments to determine the characteristics and qualities of the steel after it has been treated are part of the equipment.

On the ground floor is located a room for instruction in electrical welding. There are ten motor-generator sets of 250-ampere capacity, one 350-ampere direct-current arc welder, and two 100-ampere alternating-current arc-welding machines. The acetylene welding room on the same floor is similarly well equipped. Various types of laboratory apparatus are available for the inspection and testing of the electric and acetylene welds.



#### FOURTH FLOOR PLAN

Samuel Gompers Trade School, San Francisco, California.  
—Masten & Hurd, Architects, San Francisco, California.



#### FIRST FLOOR PLAN

Samuel Gompers Trade School, San Francisco, California.  
—Masten & Hurd, Architects, San Francisco, California.

The American Society for Metal Testing conducts a laboratory in conjunction with the trades school for the scientific investigation of metals for use in industry. This laboratory is equipped with gas and electric furnaces for the heat treating of steel and the various polishing and grinding operations for preparing the specimen for microscopic examination. There are also various machines for the testing of the metal under stress and strain.

On the second floor of the school is located the plumbing and sanitary laboratory. Here the plumbing apprentice and future sanitary engineer receives training in the most modern apparatus developed for this field. The steamfitter apprentices who are concerned with heating and ventilating, and the new field of air conditioning, and refrigeration also receive instruction. The painting, decorating, and paper-hanging instruction room

is also located on the second floor.

Aviation instruction is given as a related technical and ground course with a hope that this training may within the near future be tied in with practical flying with the municipal airport. Provision has been made for sheet-metal and body-and-fender work in a large room on the second floor and also in the yard where the automobiles can easily be worked upon.



Portion of the street front, Samuel Gompers Trade School, San Francisco, California.—Masten & Hurd, Architects, San Francisco, California.



A class in welding at the Samuel Gompers Trade School, San Francisco, California.



### A Survey Under Way

The entire third floor is devoted to industrial electricity and radio. Both theoretical and applied electricity are taught. The fourth floor is given over to classroom instruction in related technical work and the drafting room.

An extensive and intensive vocational survey is to be made of San Francisco's commercial and industrial enterprises to further study occupations for which vocational-school training can be of assistance. Elevation of the compulsory school-attendance age from 16 to 18 years in California fifteen years ago, placed upon educators the task of taking first steps toward fitting youth, who were not inclined toward a professional or literary future, in skills in the use of tools employed in productive labor. The collapse of the apprentice system in many industrial trades in recent years and the restriction of immigration quotas which has decreased the number of skilled tradesmen coming from the Old World have created a situation which has given national as well as local concern. The remedy suggested is a return to the old system of indentured apprentices in vogue a century ago with auxiliary and supplemental training to be given by trade and vocational schools.

Among the fundamental policies which are considered essential in the development of the Gompers Trade School are (a) a realization that a controlling purpose must be preparation of useful employment, (b) adap-



*Adult classes in drafting are open afternoons and evenings in the Samuel Gompers Trade School.*



*The shops in the Samuel Gompers Trade School, San Francisco, are fitted with the latest machinery and devices used in industry. Above, a class in electric welding.*

### A FEDERAL FLAG-SALUTE CASE

While noting that state courts have held to the contrary, Federal Judge Albert B. Maris, in Harrisburg, has ruled that public-school officials lack authority to expel a pupil because he refuses, on the grounds of religious convictions, to salute the flag.

The decision was rendered in an action brought by a parent, a member of Jehovah's Witnesses, whose two children were expelled from the Minersville schools. The Minersville school authorities adopted a regulation requiring all teachers and pupils of the schools to salute the flag as a part of their daily exercises. Refusal to do so was to be regarded as an act of insubordination. When his children were expelled from the Minersville schools, the parent brought action for damages against the school authorities for depriving his children of their "rightful education." He said he was not financially able to educate his children privately, and that he could not conscientiously permit them to salute the flag.

Judge Maris said "the action of the minor defendants in refusing for conscience's sake to salute the flag, a ceremony which they deem an act of worship to be rendered to God alone, was within the rights guaranteed them by the Pennsylvania constitution." Declaring that "liberty of conscience means liberty for each individual to decide for himself what is to him religious," the judge added that "if any individual sincerely bases his acts or refusals to act on religious grounds, that must be accepted as such and may only be interfered with if it becomes necessary to do so in connection with the exercise of the police power; that is, if it appears that the public safety, health or morals of personal right will be prejudiced by them."

"To permit public officers to determine whether the views of individuals sincerely held and the acts sincerely undertaken on religious grounds are in fact based on convictions religious in character would be to sound the death knell of religious liberty. To such pernicious and alien doctrine this court cannot subscribe."

Judge Maris is a member of the Society of Friends.

tation of courses and teaching methods to the needs of individual students and of specific occupations, (c) restriction of admission to pupils who can benefit from the instruction provided, (d) constant co-operation of employers and workers in the vocations for which students are trained, (e) the

employment of trained teachers with satisfactory employment experience, personal fitness, and special preparation for trade teaching, (f) adequate and modern equipment in each occupation taught, (g) an organized placement program, (h) constant readjustment of the program in the light of research.



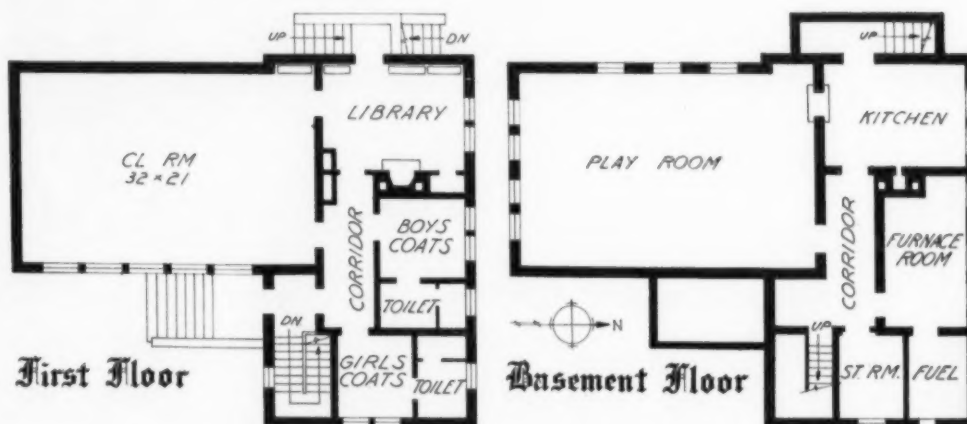
General Exterior View, District School No. 121, Watts Siding, Minnesota.  
—Carter & Meinecke, Architects, Moorhead, Minnesota.

## One-Teacher School Comes into Its Own

While one-room school buildings are passing on into the limbo of educational instruments which have outworn their usefulness at the rate of eight per day, it is certain that one-teacher schools are to be with us for many decades to come. In so many situations a one-room building provides the only possible solution for the problem of educational service to a rural community that state departments of education which enjoy the services of a division of buildings are directing attention to the planning of this type of schoolhouse quite as seriously as they are aiding in the planning of larger structures.

But the new one-teacher school building of the present decade is far from being a one-room building. A building with a belfry, one bare schoolroom, and two outhouses is quite as far outmoded as is the oxcart or the windmill.

The new rural schoolhouse for one teacher and a small group of children has as its principal room a standard classroom, usually 20 to 22 feet wide and 30 to 32 feet long. In the simplest situation there is an alcove for reading and individual work. Inevitably, too, there are separate cloakrooms for boys and girls, with inside toilets adjoining. Where funds are available, the reading alcove becomes a separate book or library room, and a playroom which serves for community gatherings is provided in a high basement. Since some country children must carry noon lunches, some provision must be made for

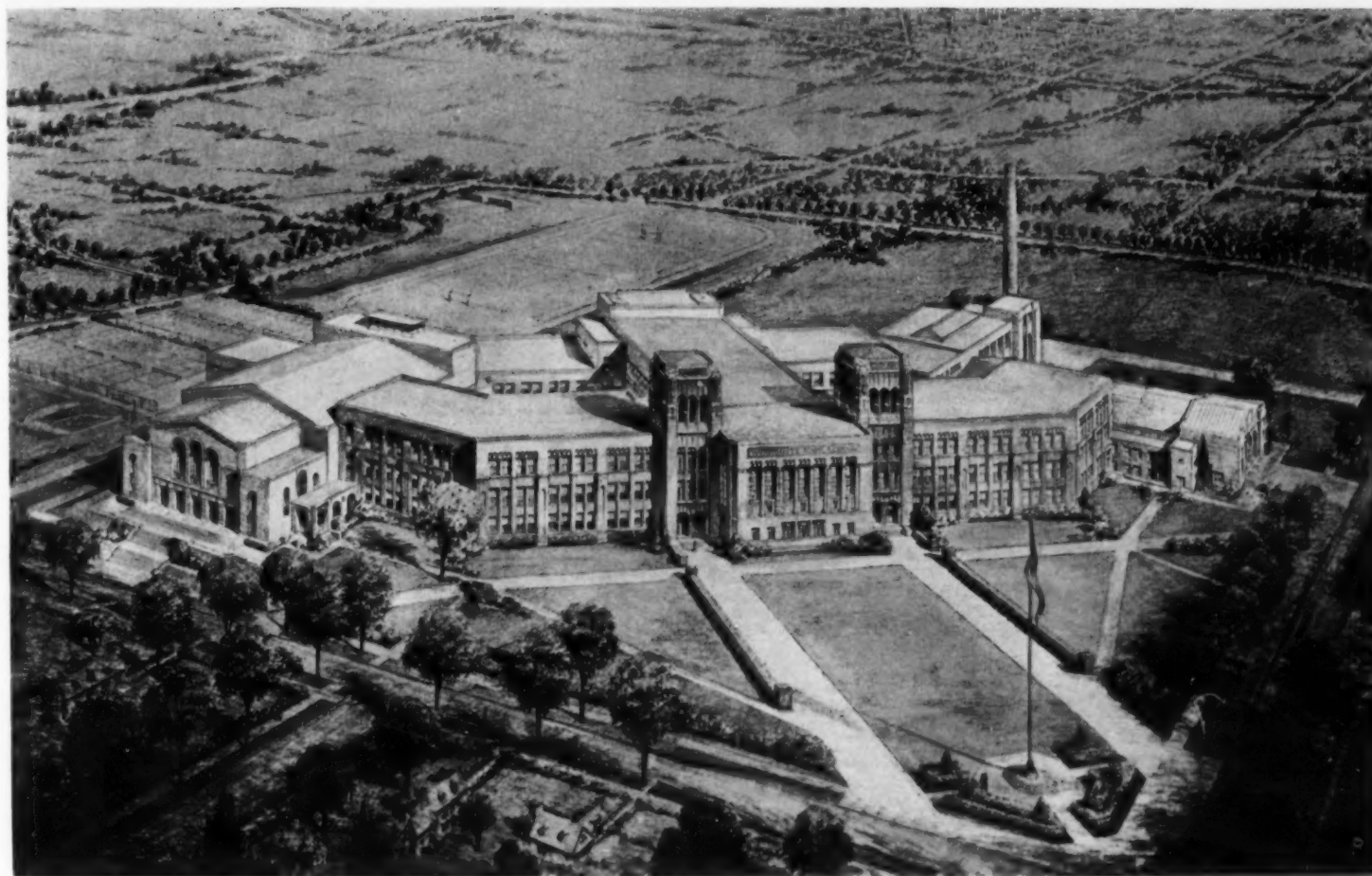


Floor Plans, District School No. 121, Watts Siding, Minnesota.  
—Carter & Meinecke, Architects, Moorhead, Minnesota.

at least warming coffee and soup, and a kitchen alcove or a separate room for this purpose becomes an adjunct to the classroom or the play space. State laws require a measure of ventilation which no stove can provide and a furnace is commonly installed. A simple flue or two will provide ample removal of bad air by gravity. For teaching purposes the classroom is provided with blackboard and tackboard space, cupboards, and shelving for storing books and teaching materials. A driven well provides water for drinking and sanitary purposes. Where power lines are accessible, electric light becomes available and pumps can be operated with a minimum of attention. A septic tank disposes of the sewage in a sanitary way.

The one-teacher school, erected in 1937 in School District 121, Clay County, Minn., meets every requirement for educational service, convenience, and safety set up by the Division of Buildings of the Minnesota State Department of Education. In the basement there are a playroom and kitchen, a furnace room and fuel bin, and a storeroom. The first floor has a classroom and library, cloakrooms, and toilets for boys and girls. The outer walls are native stone; inside partitions and roof are frame. The classroom is plastered, and the library walls are wood. The building is a WPA project, which provided much local work relief. The total cost was \$14,500, of which the school district paid less than \$3,150.





*Perspective View, Wyandotte High School, Kansas City, Kansas. — Hamilton, Fellows & Nedved, Architects, Chicago, Illinois, and Jos. W. Radotinsky, Associate Architect, Kansas City, Kansas. This view makes clear the relation of the several departments of the building to the surrounding streets. The auditorium and gymnasium wings directly face main streets so that they may be used independently of the classroom units of the building.*

## Wyandotte High School, Kansas City, Kansas

F. L. Schlagle<sup>1</sup> and L. H. Brotherson<sup>2</sup>

The new Wyandotte High School, dedicated September, 1937, represents the type of complete school building intended to serve a broad educational program for students of the tenth through the twelfth grades. It is a splendid expression of the faith our citizens have in their public schools. The building is the fourth one to house the Wyandotte High School since it was organized in 1886. The old building at Minnesota and Ninth Streets was erected in 1899, enlarged at various times, and was destroyed by fire on Saturday, March 3, 1934.

Since 1886, three additional senior high schools have been organized to serve other sections of the city. A school-population survey was made in 1928 which revealed that it would be unwise to divide the Wyandotte High School area into two smaller high-school districts. It was found

that a high school to accommodate approximately 3,100 students, working capacity, would meet the needs.

As a result of this survey, a golf course comprising 28 acres was purchased near the center of the high-school district, the present site of the new building. The following year an athletic field, with powerful lighting for night football games, a track, a concrete stadium, dressing rooms, and seats for 5,000 people, was developed at an investment of \$79,000.

The board of education, with foresight altogether too uncommon, realized that a new building was needed and set aside a building fund according to the "pay-as-you-go plan." When the old structure burned, the board had a reserve of \$450,000 to apply on the new building. Fire insurance totaling \$275,000 was added to this figure. In addition, a bond issue for \$1,200,000 carried with a strong vote of confidence. A Federal PWA grant of \$557,-

000 completed the income for the building program. The board of education appointed a committee composed of F. L. Schlagle, superintendent of schools, L. H. Brotherson, superintendent of buildings and grounds, and G. A. Widder, clerk, to co-ordinate the work and supply the necessary details to the architects, Hamilton, Fellows, and Nedved, Chicago, Ill., and Joseph W. Radotinsky, associate architect, Kansas City, Kans.

The investment in the Wyandotte High School plant now stands at \$2,544,000 and is dispersed as follows:

Building and equipment, \$2,200,000

Grounds, \$130,000

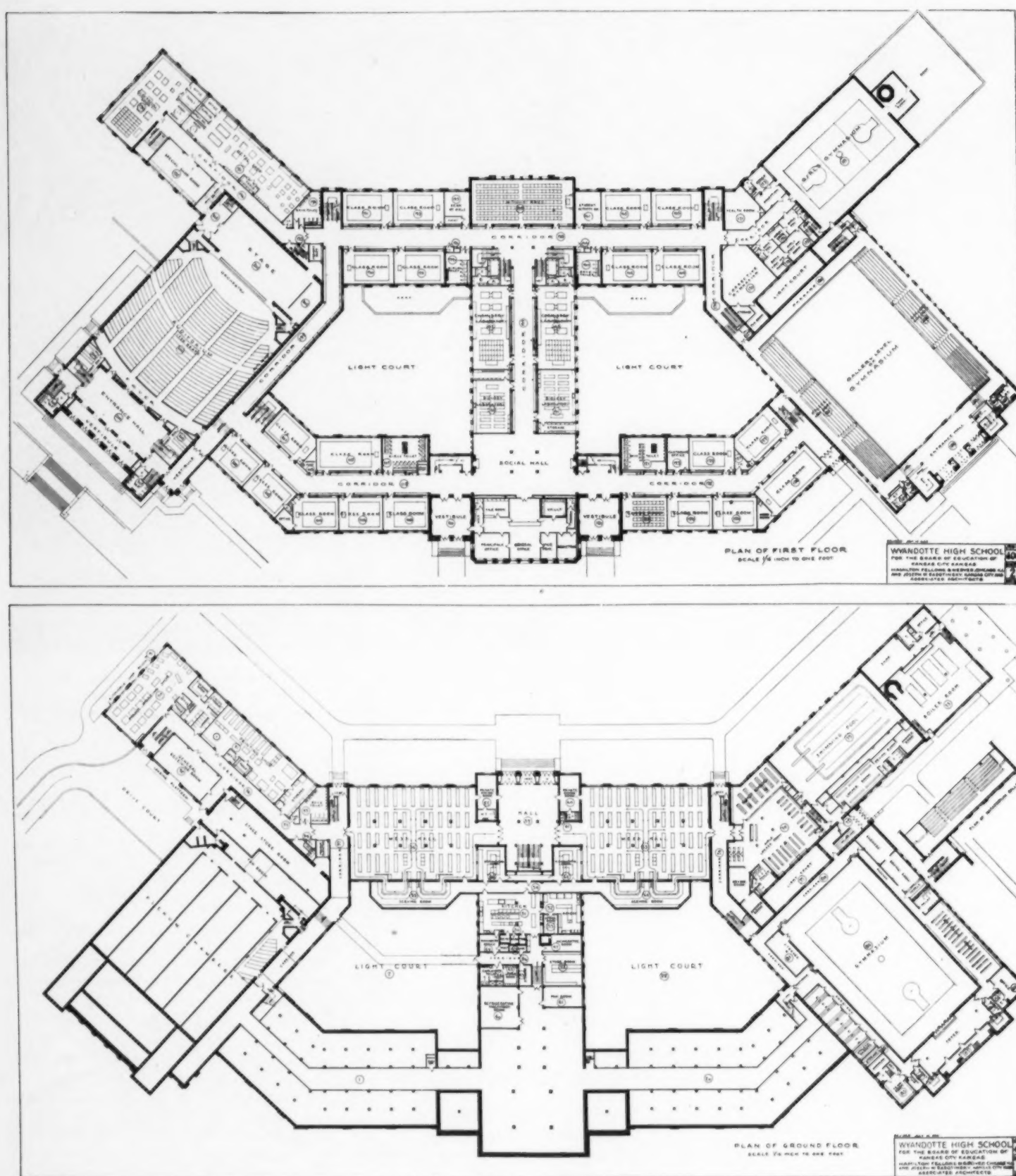
Athletic field, \$79,000

Grading, walks, and landscaping, \$135,000

The building cost 29 cents per cubic foot, an unusually economical figure in this day of high building costs. Though a bond issue of \$1,200,000 was authorized,

<sup>1</sup>Superintendent of Schools.

<sup>2</sup>Superintendent of Buildings and Grounds.



*First Floor and Ground Floor Plans, Wyandotte High School, Kansas City, Kansas.—Hamilton, Fellows & Nedved, Architects, Chicago, Illinois, and Jos. W. Radotinsky, Associate Architect, Kansas City, Kansas.*

special economies made it necessary to issue only \$1,075,000.

The interesting and unusual design of the Wyandotte High School was made possible in a large measure by the conditions of its commanding site, and the differences in grades at various points of entrance to the building. Its architectural distinction

is the expression of the natural evolution of a varied and well-ordered educational plan. The exterior masses of the building express faithfully the functional requirements of this educational project.

The design reflects the influence of the Lombard Romanesque, the brickwork and stone trim indicating a reconciliation of

the past with the present, and gives an individuality, variation, and richness—a successful combination of the utilitarian and the beautiful. The exterior of the building, faced with native shale brick, smooth face, in selected colors, exemplifies a daring solution of the problem of successfully treating brick areas with orna-



mented brick pattern work. Coherence and simplicity in plan are combined and expressed most successfully in the interior of the building by the frequent use of brick, stone, tile, and terra cotta.

Simplicity is the dominating note in the interior of the auditorium, which seats 1,800 people; however, the design has a richness attained by the use of brick for all wall surfaces, and recessed panels of brick mosaic, resembling murals. The ceiling is vaulted, of sound-absorbing material laid in pattern, with a cornice and beam treatment. The effect of the auditorium as a whole is one of restfulness, charm, and dignity. Artificial lighting is provided by means of a battery of concealed lighting units, bordering a clerestory of glass panels, and providing indirect light. Supplementary indirect light is provided in a cornice light trough, and by means of urns and vases placed in the recessed arched panels of the walls and proscenium wall niches.

The second floor, front, of the auditorium section is devoted to a recital hall, complete with stage, lighting, and equipment. The recital hall is one of the outstanding rooms of the building, particularly because of the many purposes for which it may be used. It is particularly adaptable to meetings or functions requiring a seating capacity of 250 and its location permits its being used during school periods for school functions, or by civic groups, without interference with the routine school program.

An unusual architectural feature is the "sculpture in brick" that appears on the pediment of the main gymnasium, directly above the entrance. A team at play is shown in track, football, and basketball.

The lighting fixtures in the vestibules, social hall, auditorium entrances, and on the exterior are hand wrought in bronze and iron.

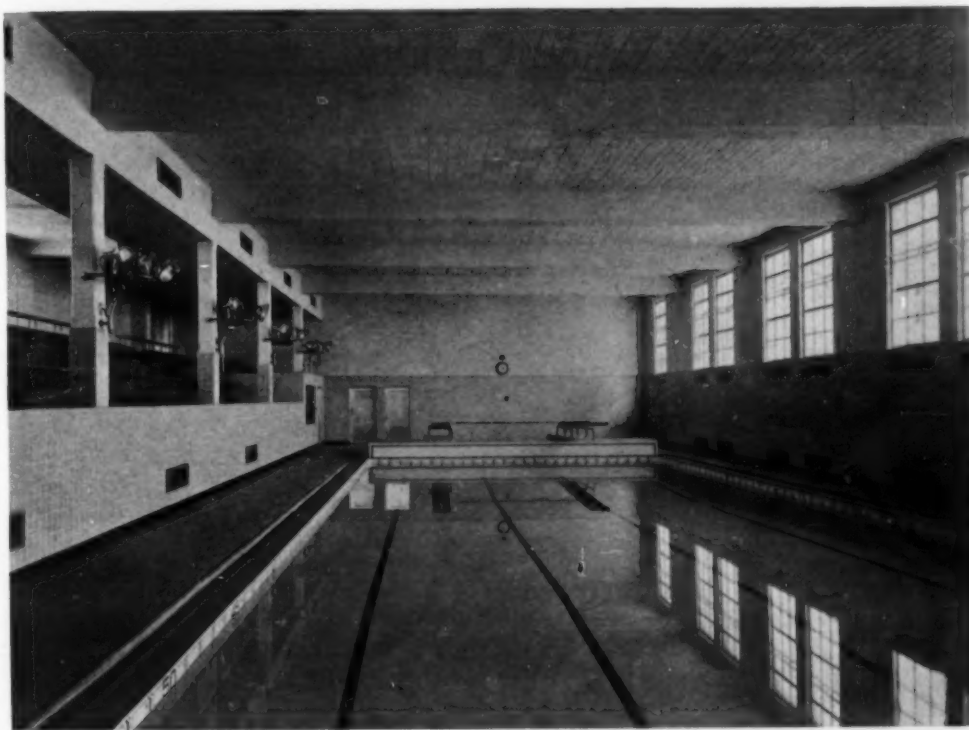
The main entrance to the building is from the northwest. The visitor first enters the social hall where sofas, chairs, and fireplaces offer a hospitable greeting. Wall surfaces are of terra cotta, ceiling of concrete beam construction, stenciled, with acoustical material between joists. The social hall is the center of the corridor life of the school. The center section of the school is largely classrooms with an auditorium and physical-education unit at opposite ends, so arranged as to be used independently of the remainder of the building. The shop unit is housed in a separate wing in the rear.

The ground floor in the rear is dedicated to shops, workrooms, and a large cafeteria. The principal's office is located between the two towers, and is adjacent to the social hall.

The library is centrally located, above the office, with a two-story ceiling height, is Georgian in design, and has appropriate wood panels, artistic lighting fixtures, and specially designed furniture. Its outstanding feature is its distinctive simplicity and



*The social hall in the Wyandotte High School, Kansas City, Kansas, is useful as a center of circulation between departments and also as a dignified introduction for both visitors and students to the important departments of the school.*



*The swimming pool of the Wyandotte High School, Kansas City, Kansas, is a bright, well-lighted room in which booming echoes and distracting noises as well as condensation of moisture are satisfactorily eliminated. The entire ceiling consists of attractive cork tiles having such properties as insulation, high sound absorption, high light reflection, and low maintenance cost.*

quiet, dignified atmosphere. Small reading rooms and a book-repair room join the main reading room on the right and left. Space is provided for 15,000 books and the most modern arrangements simplify the librarian's work.

The music department also is located on the second floor above the gymnasium sec-

tion. The vestibule leading to the vocal and instrumental rooms is paneled with cupboards which house band uniforms. Each music room is acoustically treated and has its adjoining music library. Ample provisions are included for instrument storage.

The art room, to the north, is large



*The main library room, Wyandotte High School, Kansas City, Kansas. This dignified, well-lighted room has a height equivalent to two stories of the building.*



*The main gymnasium, Wyandotte High School, Kansas City, Kansas. This room is primarily planned and equipped for a well-balanced program of physical education. Spectators' galleries are provided for basketball and other indoor sports.*

and is equipped with the latest supplies for painting, drawing, and for metal and clay instruction. One entire wall is attractively covered for a gallery display. Not far from the art room is a conservatory for growing plants, a greenhouse connected with the botany room.

The domestic-science department on the third floor includes two foods laboratories, two clothing rooms, a practical homemaking room, and a lecture room. The foods laboratories are equipped with unit and laboratory type furniture, including electric and gas stoves and tables with stainless steel tops. The clothing rooms contain specially designed furniture, fitting rooms, storage rooms, and display cases. The homemaking room is equipped with two complete units of typical home furnishings in early American maple.

The physical-education and health departments are as expansive indoors as out. The boys' gymnasium has a playing floor of 70 by 120 ft. and seats 2,500 spectators. The girls' gymnasium has a floor 60 by 86 ft. There also is a large corrective gymnasium. Tiled walls and tiled shower rooms, basket system, towel services, hair dryers, and mirrors are found in the dressing rooms. The swimming pool, with separate shower rooms, is 28 by 60 ft., and





*The main auditorium, Wyandotte High School, Kansas City, Kansas. The room is finished in warm buffs and browns and with brick mosaic in greens and browns.*

has a gallery for 250 spectators. The pool is clean cut, artistic and has tile finish both in the pool and on the walls. Doors and sash in the pool room and shower rooms are of aluminum. The nurse has a large clinic for examination and rooms with beds, a temporary hospital for the school day. Special space is provided for first aid. A classroom in connection completes the health and physical-education unit.

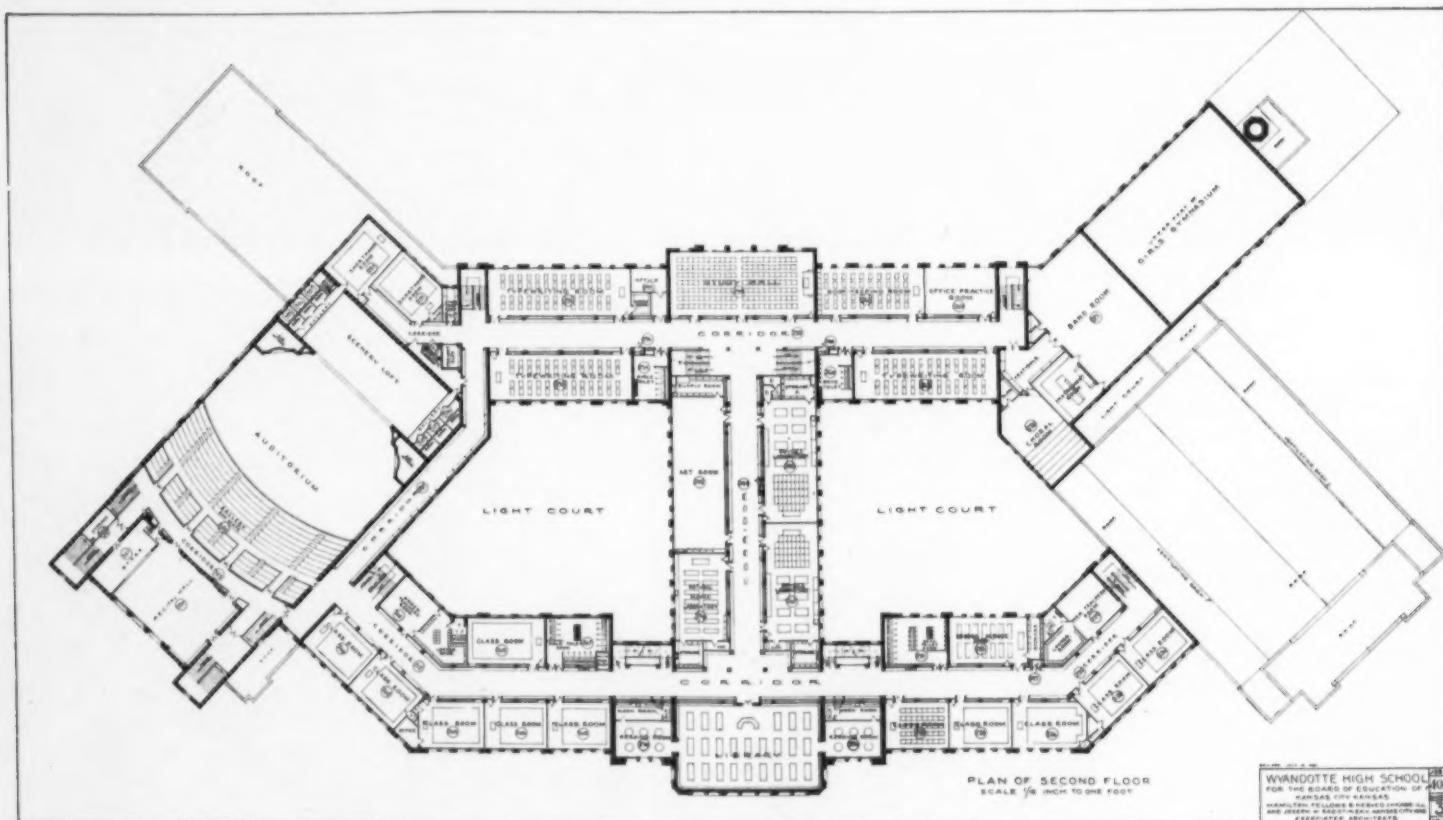
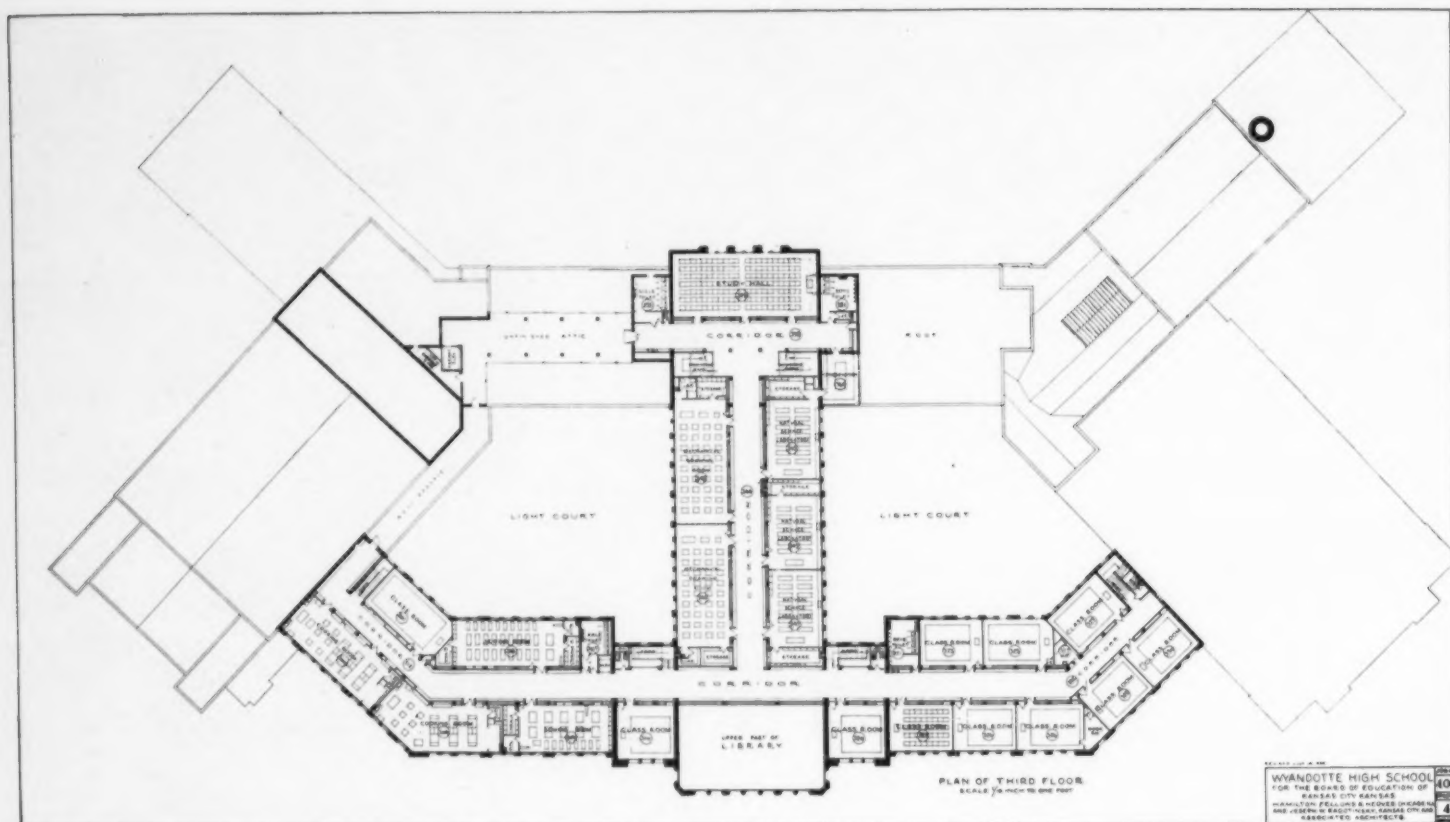
Separate play yards, with asphalt surface, for boys and girls are conveniently located near the gymnasiums with the athletic field adjacent. The health program will be conducted outdoors when weather permits. Parking lots for 700 cars are provided.

Each standard classroom, accommodating 40 pupils, is equipped with a teacher's wardrobe and built-in bookcase. A filing case, bulletin boards, and blackboards also are provided. Electrical outlets are found in the front and rear of each room as well as a conduit for a public-address system. The building was designed for a six-period school day with study halls and library facilities accordingly.

The corridors and stairways offer a



*Main entrance to the gymnasium, Wyandotte High School, Kansas City, Kansas. The character and use of the unit are strongly expressed in the brick and tile mosaic above the main entrance.*



*Second and Third Floor Plans, Wyandotte High School, Kansas City, Kansas.—Hamilton, Fellows & Nedved, Architects, Chicago, Illinois, and Jos. W. Radotinsky, Associate Architect, Kansas City, Kansas.*

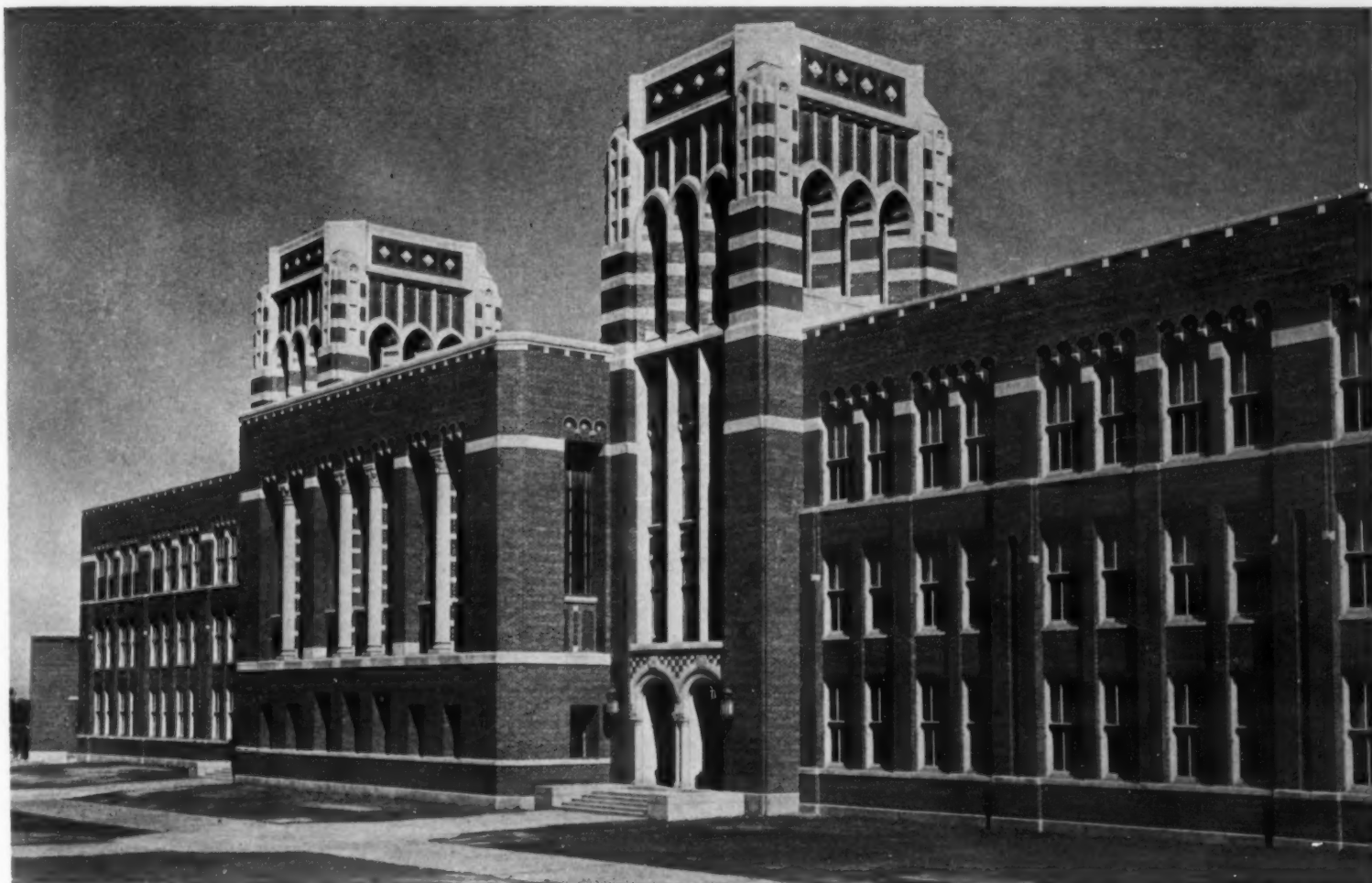
splendid circulation system of the building. Student lockers, totaling 3,100, equipped with combination locks are recessed in the corridors. Each floor is well equipped with drinking fountains which are recessed in the wall in a most pleasing manner. The floors are marbled asphalt tile with tile base and terra-cotta

wainscoting. The ceilings are acoustically treated as are the ceilings in all special rooms, including library, office, commercial rooms, swimming pool, gymnasium, etc. The toilets are located in respective positions on each floor and the walls and partitions are of marble.

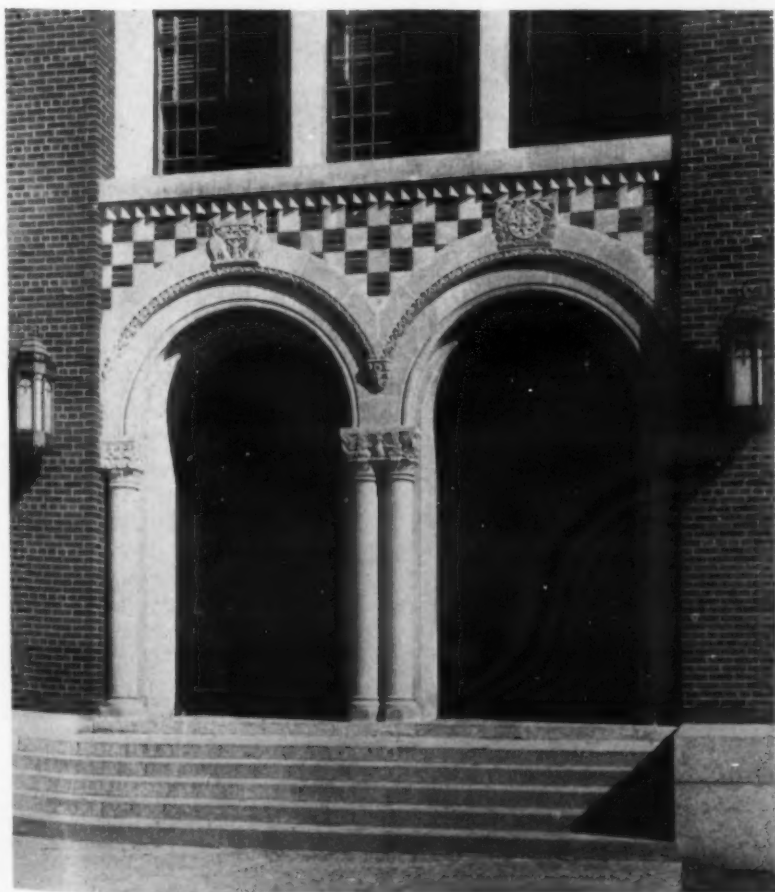
The cafeteria has four serving lines and

has two dining rooms seating 500 pupils each. A large kitchen contains separate rooms with facilities for baking, cooking, salad making, and dishwashing. Artistic furniture, with well-decorated walls, Venetian blinds, and a high ceiling with acoustical treatment, lends the proper atmosphere for a good dining room.





*Tower Front, Wyandotte High School, Kansas City, Kansas.—Hamilton, Fellows & Nedved, Architects, Chicago, Illinois, and Jos. W. Radotinsky, Associate Architect, Kansas City, Kansas.*



*A tower entrance to the Wyandotte High School, Kansas City, Kansas.*



*Vestibule, Auditorium Entrance, Wyandotte High School, Kansas City, Kansas.*



*The auditorium entrance to the Wyandotte High School, Kansas City, Kansas. The recital hall is immediately above the vestibule and entrance hall.*

The shops are most complete. A wing of the building back of the auditorium houses the six special shops, each of which

will accommodate 30 students. These are: general shop, wood shop, metal shop, electric shop, auto-mechanics shop, and print

shop. Walls of the shops are of tile and painted brick. The windows are standard industrial type.

The boiler room, spacious and well lighted, is located at the south end of the west portion of the building. While it is attached to the building, there is no connection to the academic section, except through a tunnel.

The boiler plant consists of three 350 h.p. and one 145 h.p. fire-tube boilers, set approximately six feet above the floor, and equipped with underfeed stokers of the ram type. A coal conveyor carries the washed Cherokee screenings from the bin to the stoker hoppers; stokers are of the side-dump type, ashes being removed by hand to a conveyor which delivers them to a truck outside the building.

Steam is generated at 30 pounds pressure and is delivered at this pressure to the cafeteria and to pressure-reducing valves in various sections of the building. These pressure-reducing valves deliver steam to the radiators at approximately one pound pressure. Two vacuum pumps, located in the boiler room, maintain vacuum on the return piping, and deliver the condensate to a large insulated re-

(Concluded on page 106)



*The recital hall, Wyandotte High School, Kansas City, Kansas. The room has been especially treated to provide ideal acoustical conditions for musical recitals and dramatics.*





*General Exterior View, Washington School, Evansville, Indiana.—Harry E. Boyle & Co., Architects, Evansville, Indiana.*

## The Washington School, Evansville, Indiana

Someone has remarked that the most recent school building in a community provides in itself an index of the civic intelligence of the the board of education and of the professional wisdom of the superintendent of schools. For every new schoolhouse is truly a test of a school board's willingness to provide the plant facilities not only for the present but for the future growth of education as a social and civic force; it is concrete evidence of a superintendent's interpretation of the best in curriculum-making and method and is his prediction of the progress to be made within the next decade.

A school building which is from the exterior a dignified example of colonial design, and inside is a complete, carefully studied arrangement of rooms for study, work, and physical activity, all flexibly arranged for an expanding program of elementary education—is the new Washington School, Evansville, Indiana. In a very true sense the building represents the educational planning and foresight of Supt. Ralph Irons and of his staff of supervisors and assistants; it also represents the business acumen and community enterprise of a competent board of education, and finally the high architectural skill of specialists in schoolwork, Harry E. Boyle and Associates.

The building was projected four or five years before the actual planning was begun in the winter of 1935-36. Contracts were let in April, 1936, and the school was occupied in September, 1937.

The exterior is in the colonial style with varied red brick walls and Indiana limestone trim. The roof is slate, ranging in color from blue to black; exposed metalwork is copper. The walls throughout are brick; the floor slabs are concrete; the roof is steel framing with precast concrete decking.

The building faces north so that a majority of the rooms have east or west exposure. Entry to the building from the front is through a main door leading to the library,

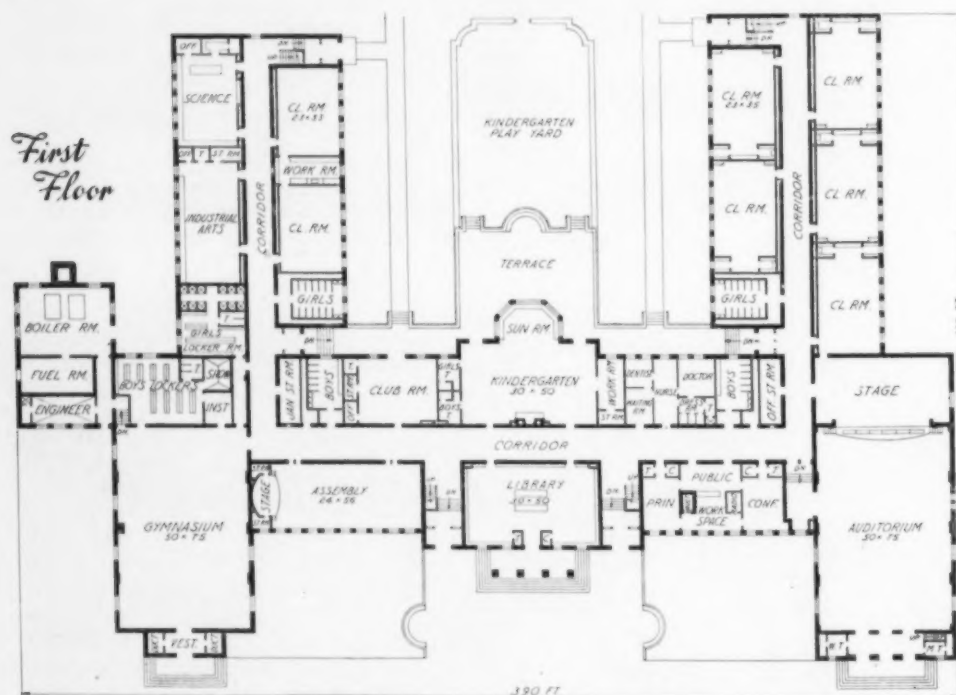
through two doors leading to the main corridor, and separate entrances to the auditorium and the gymnasium. The building is entirely without basement, and the boiler and



*The library in the Washington School, Evansville, Indiana, is one of the most attractive rooms in the building. A number of tables and a collection of books serve adult readers who are admitted to the room after regular school hours.*



*The woodworking shop in the Washington School, Evansville, Indiana, serves also for an introductory drawing course.*



*First Floor Plan, Washington School, Evansville, Indiana.  
—Harry E. Boyle & Co., Architects, Evansville, Indiana.*

fuel rooms are in an east wing entirely outside the main walls.

The plan of the first floor takes strongly into account the community as well as the instructional uses of the larger room units. Adjoining one of the pupil entrances is the administrative suite with its private room for the principal, its general office, a conference room in which teachers can meet parents, a vault, a radio-control room, toilets, and storage space. Opposite the administrative suite are rooms for the health unit, including the school physician, the nurses, the dentist, and space for dressing rooms, etc. At the ex-

treme west end of the building is the auditorium, which seats 600 persons, has an acoustical ceiling, a stage large enough for all school entertainments, a motion-picture projection booth, and a public-speaker unit. The room is treated with an acoustical tile ceiling and constitutes from the standpoint of lighting and heating and other conveniences, an independent unit.

In the west wing of the building there are also five standard classrooms and separate toilets for boys and girls.

Back of the library which is a central unit in the first floor, there is a kindergarten,

arranged so that it includes a sunroom and adjoins a brick terrace where children may carry on play activities outdoors.

In the east wing, adjoining the front pupils' entrance, there is a small assembly hall, which may be used for student activities. It is ample for seating 125 persons and serves for student activities and small neighborhood gatherings. Across the corridor is a clubroom, with toilets, storage space, etc.

### The Gymnasium

At the east end of the corridor a gymnasium is located. The room is planned primarily for physical-education activities but, with the balcony seating 200, it can be used for games and public demonstrations. The room which has cream-colored glazed-brick walls and a hard maple floor, is treated as an independent unit of the building. Locker and shower rooms and toilets adjoin it to the rear.

In the rear extension to the east, there are two standard classrooms, a large shop for industrial arts, and a complete general-science laboratory.

The middle section on the second floor includes in the front a large art room, and in the rear a music room. In the west wing there are eight classrooms and separate toilets for boys and girls. In the east wing there are five classrooms, a large domestic-science suite, rooms for the teachers, and toilets. One of the classrooms will be used for an ungraded class. It has adjoining it a workroom where special work activities can be carried on.

### Equipment Complete

The building has been carefully planned so that each unit is particularly adapted in arrangement, finish, and equipment to serve the special activities carried on. The school as a whole is equipped with a program-clock and bell system. A complete radio and public-address system makes it possible for programs to be received by the entire school or by any room or group of rooms. A portable speaker is available to the principal so that he may broadcast from any part of the building.

The classrooms have plastered walls, slate blackboards, built-in lockers and cloakrooms, bookshelves, cork display boards, asphalt-tile floors. The corridors have glazed-brick wainscots and the same treatment is carried into the stair halls and toilets.

The special finish in the special rooms includes such treatment as the use of complete sound insulation for the music room, an acoustical ceiling, and soundproof doors. The industrial-arts room has glazed-brick wainscots, and the homemaking practice suite is finished in domestic style. All of the built-in furniture is especially designed by the architect, with flush cabinetwork and metal base pieces.

The building is heated by means of a two-pipe vacuum-steam system. Heat is provided by two steel, stoker-fired boilers, with automatic controls. Unit ventilators are placed in all classrooms and unit heaters are provided in the gymnasium. The temperature-regulating system is arranged on the zone basis.

### Cost and Capacity

The building was constructed at a cost of \$450,000, of which 45 per cent was provided by a PWA grant. The city of Evansville spent \$25,000 additional for the site, and \$20,000 for furnishings.

The present capacity of the building is 1,000 pupils and the plan allows for additions that will increase its capacity to 1,200.



# Reducing the Cost of School-Building Construction

W. K. Harrison and J. A. Fouilhoux<sup>1</sup>

A multitude of related factors must be considered in attempting to reduce the cost of school buildings. One may be justifiably criticized in discussing a particular phase of the cost problem without including an analysis of all ramifications. It is difficult, however, if not impossible, to set down principles which will be universally adaptable and useful. Each part of the country and each community offer variations in labor and material conditions which prevent any possibility of developing a uniform formula for school costs. There are several factors which should be given consideration in every case. Those factors are discussed in this paper.

Briefly the items which go to make up the total cost of a school plant may be obtained as follows:

- A. Bond issuing expense
- B. Education survey and consultant fees
- C. Purchase of land
  - 1. Property cost
  - 2. Cost of acquiring title
  - 3. Appraisals
  - 4. Condemnation proceedings
  - 5. Cost of deeds
  - 6. Search of title
  - 7. Surveying
  - 8. Boring and testing
  - 9. Legal service
  - 10. Incidental expenses
- D. Improvement of land
  - 1. Filling
  - 2. Grading
  - 3. Landscaping and playgrounds

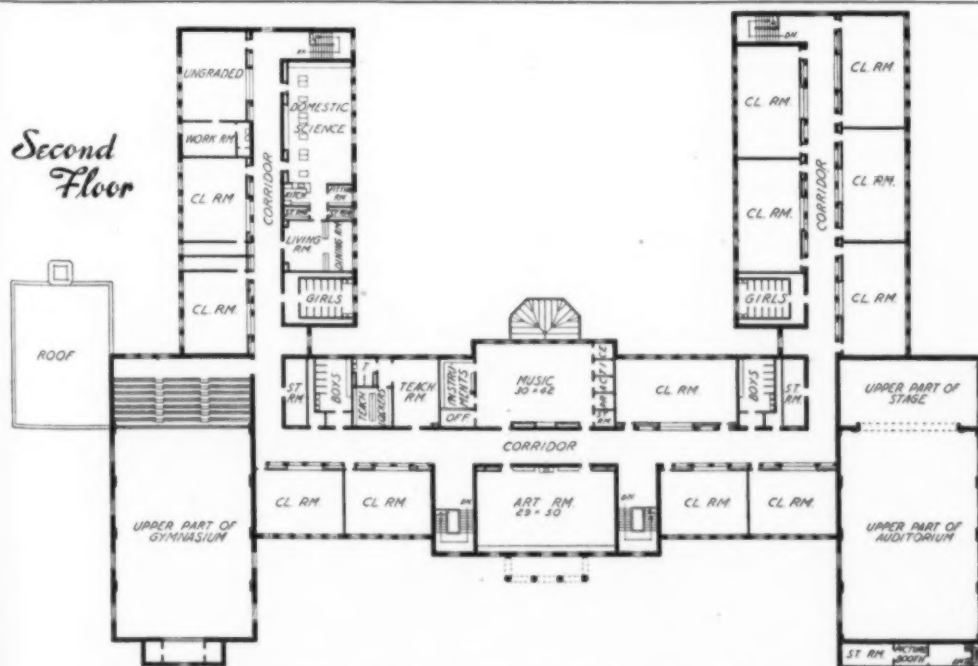
- 4. Landscape architect's fees
- 5. Seeding
- 6. Sidewalks and drives
- 7. Fences, flagpoles, etc.
- E. Building structure
  - 1. Fees of architect, engineers, supervisors, consultant, and attorney
  - 2. Advertising for bids
  - 3. Miscellaneous expenses
  - 4. General contract
    - a) Structural steel work
    - b) Masonry
    - c) Floor slabs
    - d) Excavation
    - e) Roofing
    - f) Sheet-metal work
    - g) Carpentry and millwork
    - h) Painting
    - i) Plastering
    - j) Hardware
    - k) Steel sash and doors
    - l) Glazing
    - m) Waterproofing
    - n) Terra-cotta partitions
    - o) Concrete foundations
    - p) Finished floors
    - q) Marble and tile work
    - r) General items
  - 5. Heating and ventilating contract
    - a) Units
    - b) Boilers and burners
    - c) Piping
    - d) Ducts
    - e) Radiators, heaters, stacks, etc.
    - f) Insulation
    - g) Thermostats and controls
  - 6. Plumbing contract
    - a) Excavation
    - b) Heaters, pumps, tanks
    - c) Piping, hot and cold water, drinking water, gas, drainage, and sewage
    - d) Painting
    - e) Fixtures
    - f) Sheet-metal work

- 7. Electrical contract
  - a) Conduits and wiring
  - b) Fixtures
  - c) Boards, boxes, and controls
  - d) Emergency equipment
  - e) Fire alarm, call, intercommunicating phone, public address, and motion-picture wiring and equipment
- 8. Furnishing costs
  - a) Instructional furniture and equipment
  - b) Administrative furnishings
  - c) Auditorium furniture
  - d) Portable cabinets
  - e) Pictures, wall paper, hangings, rugs, etc.
  - f) Gymnasium equipment
- 9. Extra costs to be covered by unit costs
  - a) Excavation
  - b) Foundations
  - c) Heating
  - d) Changes in equipment specifications
  - e) Extra plans and architectural services
- 10. Miscellaneous costs
  - a) Custodial service
  - b) Dedication costs
  - c) Insurance, advertising, and legal service
  - d) Miscellaneous expenses such as telephoning, traveling expenses, fares, etc.

## Problems of Site

The actual cost of constructing the building and improving the land, as outlined in items D and E, are frequently dependent on surveys and selection of land in items B and C. The actual selection of a site, the surveying of the land, the test borings for foundations, and the planning in relation to size and orientation of building should be conducted with the participation and advice of the architect. A high-grade architect may be able to save thousands of dollars through his knowledge of the relationship of the cost of excavations, foundations, filling, and grading to the topography of the site and soil or rock conditions. Thus, when attempting to reduce costs of building construction, the planning should begin with the selection of the site in terms of construction requirements. It is realized that in many situations, educational requirements demand the selection of a site which requires considerable expense for improvement. However, the joint decision of the architect and educational consultant in every case will assure the most economical selection in terms of educational needs.

Item D, the improvement of the site, is extremely variable, and little can be suggested that will be universally applicable. However, a good landscape architect will be able to suggest a satisfactory and most economical solution, in keeping with the community purse. Woods and rugged ter-



Second Floor Plan, Washington School, Evansville, Indiana.  
— Harry E. Boyle & Co., Architects, Evansville, Indiana.

rain are desirable over a part of the school site. By retaining them in their natural settings, little expense is involved.

The items involved in the cost of the building structure are listed under grouping E. Attention to details is of great importance in reducing construction costs, for it is through simplification of design and the selection of proper materials that most savings can be made. Fees for experts are largely standardized and any reduction in fee through competition or bargaining will usually result in inferior planning. It is best to pay the standard fee to a reputable architect. It is quite likely that he will be better able to suggest more economical methods of construction than the man who feels that fee lowering is superior to architectural skill as a sales argument.

### Range of Costs

In advertising for construction bids, all reputable firms should be included. If necessary, contractors in other communities may be asked to bid to stimulate competition. Above all, contractors should be allowed ample time to study the specifications and plans in the preparation of their bids. Without sufficient time, contractors are frequently forced to estimate prices roughly and their price is generally sufficiently high to allow for errors.

The range of costs under the different contracts usually is approximately as follows:

General Contract . . .	70	to	80	per cent
Heating and Vent. . .	10	to	12	per cent
Plumbing . . . . .	3.5	to	5.5	per cent
Electrical . . . . .	3.5	to	4.5	per cent
Equipment . . . . .	5	to	10	per cent

Approximately 50 per cent of the cost of the general contract may be made up of labor and materials for masonry, steel, floor slabs, and foundations. Much remains to be done toward reducing these costs. Therefore, it is well to keep in mind certain likely trends. In the school-building field in this country very little has been accomplished with reinforced concrete, and yet it is believed that substantial reduction in building costs can be accomplished through the proper engineering of reinforced-concrete structures. Structural costs can be substantially cut by the elimination of waste spaces and ornamentation. Walls should be reduced to a minimum thickness consistent with satisfactory protection, good acoustic control, fireproofing, and structural arrangement. Prefabricated sections may be used in many situations especially for smaller buildings. Some builders are of the opinion that prefabrication of exterior walls and supporting members will eventually be practical even in large structures. Certainly the cost of manufacture will be considerably lower than the cost of building, and with a reasonable degree of standardization this saving may readily be passed on to school districts.

### Possible Reductions in Cost

The other items listed under the general contract in the table primarily refer

## Model Classrooms of 1937

Will E. Wiley<sup>1</sup>

A constructive educational display was presented at the annual Los Angeles County Fair in October, 1937, by the County School Department. Two modern classrooms were built full size and then furnished with modern equipment. In the primary room a dairy unit, which had been worked out by the children under regular school conditions was displayed. In the intermediate room, a study of colonial life as carried on in a typical classroom was presented.

Just opposite these modern rooms, two classrooms of a generation ago were shown. The formal rows of desks, the large amount of blackboard space, the drill type of study materials, and the dull colors of the rooms were in sharp contrast with the attractive, modern rooms.

It was easy for parents and taxpayers to visualize the progress being made in the public schools, when the school they attended was placed alongside the one the children of the present day are attending. The accompanying pictures give some idea of the exhibit, but the color, the actual handwork of little children, the attractive modern furnishings are difficult to capture in photographs. Throngs of spec-

<sup>1</sup>Superintendent of Schools, Whittier, Calif.

tators, however, were loud in their praises of the display. County Superintendent A. R. Clifton and his staff were widely congratulated on this constructive and educational piece of work. The idea is worthy of duplication in other centers of population.

The two modern classrooms were interesting because they represented such different solutions to the activity type of program. The primary room was designed by Marsh, Smith and Powell, of Los Angeles, architects for the San Marino School District. The room is larger than the standard classroom and has an alcove at either end. Wrap closets and storage space at one end is combined with a workroom and built-in benches where the children can use tools in the construction activities. The other alcove is equipped as an attractive reading room. The main part of the room has storage cabinets and bookcases. The color scheme for the room has been given very careful attention. The lights are connected with an electric eye that switches on automatically whenever the light falls below a safe intensity.

The intermediate room was designed by Architect R. L. Warren of Whittier, Calif., for

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to finishing and specialized work. Of these items cost reduction may frequently be attained by utilizing standard manufactured materials and equipment. Carpentry and millwork required for special items are expensive. Lockers, filing cases, bookcases, cabinets, doors, sashes, and the like should be so designed and planned that stock manufactured products may be used. Floors of first-grade maple are expensive although very serviceable under proper maintenance. Battleship linoleum laid on felt is cheaper than first-grade maple and is quite desirable for classrooms. Acoustical-plaster ceilings are cheaper than those built up of acoustical tile. Pine sash is cheaper than steel sash, although the latter is generally accepted as more durable. Ornamentation should be reduced to a minimum. Simplicity in design offers greater flexibility and is equally impressive and dignified. Much waste of money may be attributed to overequipping schools with expensive and elaborate hardware. Hardware may be adequate and high grade and yet simple enough to be inexpensive. In most cases marble is unnecessary since several composition materials are available which are more durable and serviceable.

In all attempts to reduce costs of building materials one important principle should be kept in mind at all times; namely, *simplicity in design, construction, and equipment will never be regretted, but the use of inferior grades of materials or cheap construction will generally result in high maintenance and operating costs throughout future years.*

Recent tests and recommendations forecast the possibilities of a considerable saving in the cost of heating and ventilating

by the elimination of central mechanical systems. Direct heating with properly designed window-gravity ventilation is entirely satisfactory in the large, modern, activity classrooms. At present various state laws stand in the way of more progressive design of heating and ventilating systems, but the time cannot be far away when legislatures will realize the lack of objectivity in a uniform 30-cubic-foot-per-pupil-per-minute requirement.

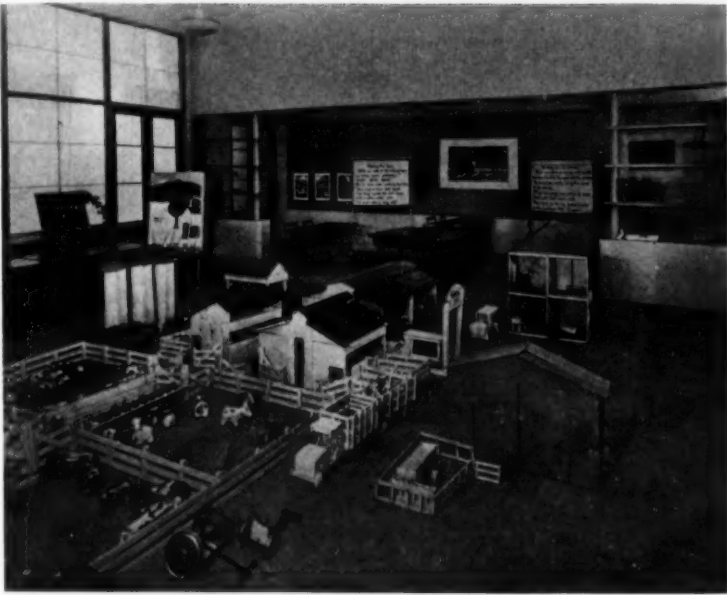
### Plumbing and Electrical Installations

In the field of plumbing installations short runs, centralized vertical piping, and careful analysis of the acceptable minimum number of facilities are essential to cost reduction. There is nothing to be gained by using porcelain or enameled-iron fixtures. Vitreous china is by far the cheapest in the long run.

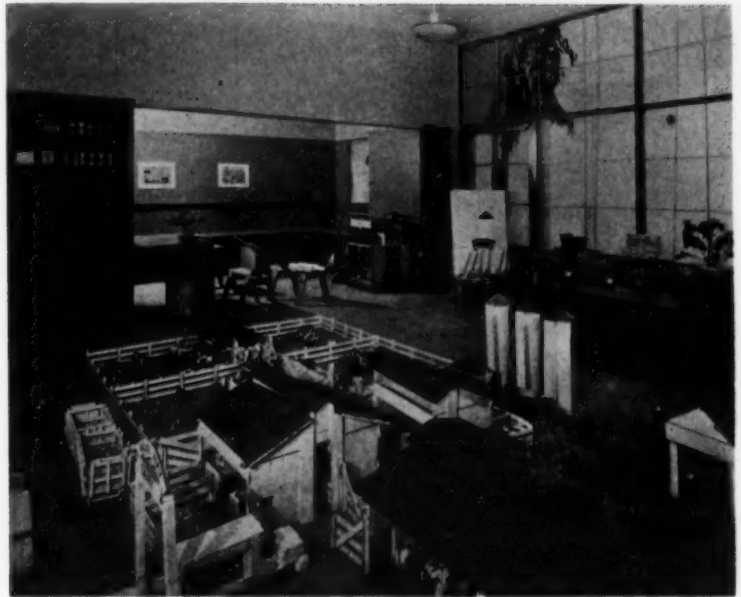
Electrical costs may be reduced primarily through utilization of standard, simple fixtures. The actual wiring must be carefully installed. It should be of such capacity as to meet future requirements. An installation which will allow only 15 foot-candles would be quite expensive to replace, if it were later decided to increase the illumination intensity to 30 foot-candles.

It would be possible to extend this discussion into many realms of planning and construction costs including state building codes, space utilization, ill-adapted buildings, the relation of cost to educational value, and the relation of the cost to maintenance and operation of plant. The investigations required in these fields are practically unlimited. The few outstanding facts offered here should certainly be given consideration by architects and educators.





*A primary classroom of today reproduced from the Huntington School, San Marino, California. In the foreground is a study unit by second-graders. In the background the reading alcove.*



*A primary classroom of today, showing the work alcove with its outfit of carpentry tools, movable tool rack, storage space, work benches, etc.*



*A primary classroom of yesterday.*



*A middle-grade classroom of yesterday.*



*A middle-grade classroom showing in the corner a portion of a colonial life project prepared by the pupils.*



*A middle-grade classroom reproduced from a room in the Whittier School, Whittier City, California.*

# Planning School-Building Construction Programs<sup>1</sup>

Don C. Rogers, Ph.D.<sup>2</sup>

The superintendent of a city school system has a myriad of responsibilities. In Chicago these include the statutory duties of selecting school sites and recommending the construction of new buildings and additions. Formerly, these last-named responsibilities were delegated to an assistant superintendent. Since he also had a multitude of other duties, the program of site selection and building construction was likely to be a hit-or-miss proposition. One assistant superintendent described his site selecting as follows: When the schools in some section of the city got so badly overcrowded that delegations of parents with petitions for seat-shortage relief started pressure on the central office, he would drive out to that section of the city and cruise around the neighborhood ("pussy-footing," he called it) until he found a tract of land for the school board to buy.

About 1924, an Educational Commission consisting of school leaders and outstanding laymen—such as the president of the Northwestern University, the president of the University of Chicago, the president of the Chicago board of education, and others—recommended the establishment of a bureau of research and building survey. The board of education authorized the bureau and placed it in the education department under the superintendent of schools.

Building survey experts were brought to Chicago to launch the work of this new

bureau—Clarence D. Kingsley from Massachusetts (famed as the chairman of the N.E.A. committee which developed the Seven Cardinal Aims of Secondary Education), Homer Davis from Arizona (who became the first director of the bureau), and Earl D. Cline from Iowa (now superintendent at Dubuque). These men surveyed the city of Chicago, and co-operated

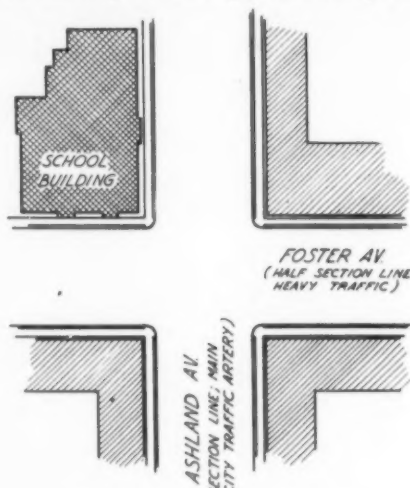
including kind of building, size, and program of rooms; adjustment of school district boundaries; moving portables; opening and closing branches; and reviewing floor plans prepared by the school-board architect.

In the past dozen years there have been many improvements in the school plant, both sites and buildings. Many of these improvements are due to the influence of the Bureau of Research and Building Survey.<sup>3</sup> Following is a sampling of some of them:

**Adequate Sites:** The average area of a school site in Chicago has been doubled since 1925. Sites are now chosen on the basis of scientific data: the preparation of spot maps of pupil residence, a study of types of zoning, the avoidance of arterial streets and other traffic hazards, definite standards of walking distance, and freedom from such nuisances as noise and dust. In fact, a score card has been developed setting up site-selecting criteria and weighting them. The city of Chicago has been laid out with a school-site pattern which is gradually being filled in.

The Trumbull elementary-school building is an example of the earlier era. It is located on a restricted site scarcely large enough for the building itself, with practically no setback from the sidewalk line. This school stands at the intersection of two of Chicago's main arteries of traffic, with only a 12-ft. sidewalk (including the parkway) separating the building from thousands of speeding automobiles. Teachers and pupils are distracted by the sound of passing cars and noisy brakes.

<sup>3</sup>In one instance, the superintendent of schools said that the Bureau of Research and Building Survey had been responsible for a saving on one project sufficient to cover the cost of maintaining the bureau for several years ahead.



An example of faulty school site selection.

with the school-board architect in the preparation of new type school-building plans.

By devoting itself exclusively to a particular field of schoolwork, the new bureau was able to make long-term plans. In the ensuing years its work developed into the following: selection of sites; preparation of school-building construction programs



Good and poor fenestration in Chicago elementary school buildings.

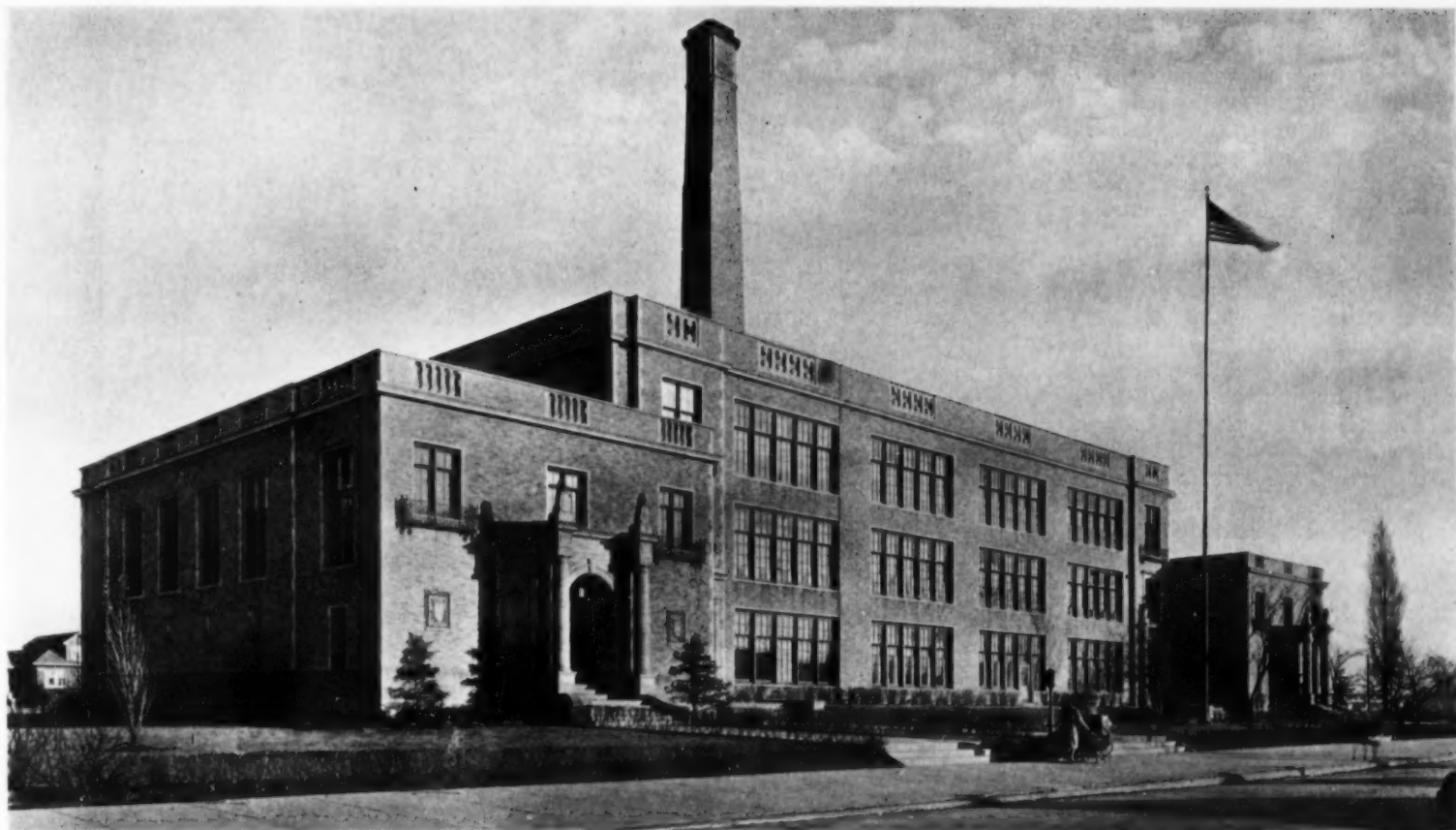


The John P. Altgeld School, Chicago. An illustration of a building type in which historical architectural precedent overshadowed the practical elements of lighting, roof design, and economy in materials.

<sup>1</sup>Paper presented before the National Council on Schoolhouse Construction at Columbus, Ohio, October 22, 1937.

<sup>2</sup>Director, Bureau of Research and Building Survey, Chicago Public Schools.





*The Jamieson Elementary School Building, Chicago, Illinois.—John C. Christensen, Architect for the Board of Education, Chicago.*

Potential pupil-hazard is omnipresent. The sidewalk is only 3 in. above the pavement at one place, and in winter the engineer-

custodian keeps ashes on the icy street in front of the school for fear that the automobiles will skid onto the sidewalk.

Since 1925, the typical elementary-school site (for example, the new Jamieson building newly opened September 27, 1937) is one full city block in area, located at least one block removed from an arterial street, and so centralized that 90 per cent of the pupils live within a radius of one half mile.

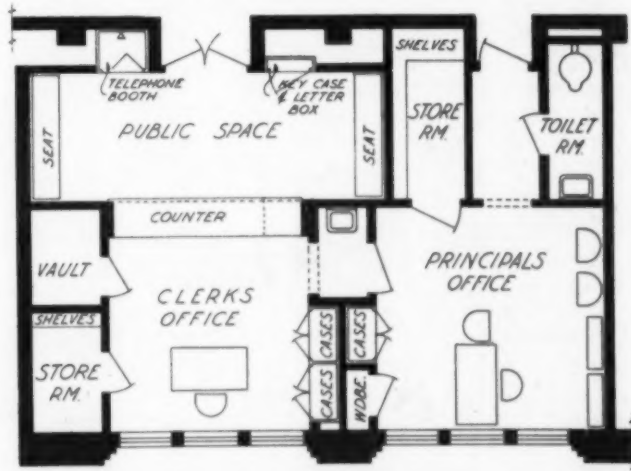
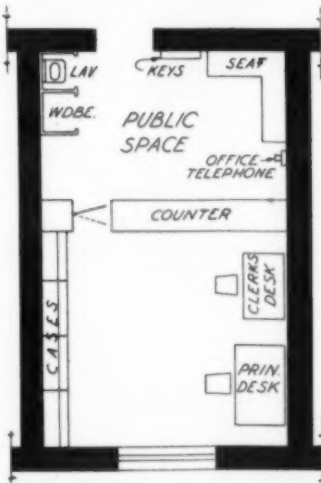
**Simpler Architecture:** It is possible to have first-class architectural design combined with sound educational features. In the past, some school buildings have had educational or financial sacrifices made to attain a desired architectural end. The new Jamieson building has a simple, pleas-

ing appearance, and it has no lavish ornamentation to increase unduly its cost.

The fenestration of the building is excellent. In the Trumbull School, on the other hand, an architectural effect was produced by accentuating vertical lines with very deep brick mullions, sacrificing needed classroom light. Other schools, which have been ornately decorated with cut stone and terra cotta, mansard roofs, and other devices, are no more pleasing in appearance than the new Jamieson. Under the policy of larger sites, it is possible to permit 50- and 60-ft. setbacks for new buildings, at the same time retaining adequate playground space. The setback permits landscaping and provides a proper architectural perspective.



*Outline Sketch Plans, Jamieson School, Chicago, Illinois.—John C. Christensen, Architect.*



*At the left, a traditional office for an elementary school. At the right, an adequate administrative office for an elementary school, Chicago, Illinois.*

**Improved Educational Features:** During the past 12 years Chicago has erected 92 school buildings (not counting additions). Space does not permit an enumeration of all of the improvements made in them, but following is a sampling of several:

1. **Kindergarten.** Formerly the kindergarten room was no larger than an ordinary classroom. In the new Jamieson and in all other Chicago school buildings erected since 1925, the kindergarten suite is twice the size of an ordinary classroom, has its own toilet, storage room, and an outside exit.

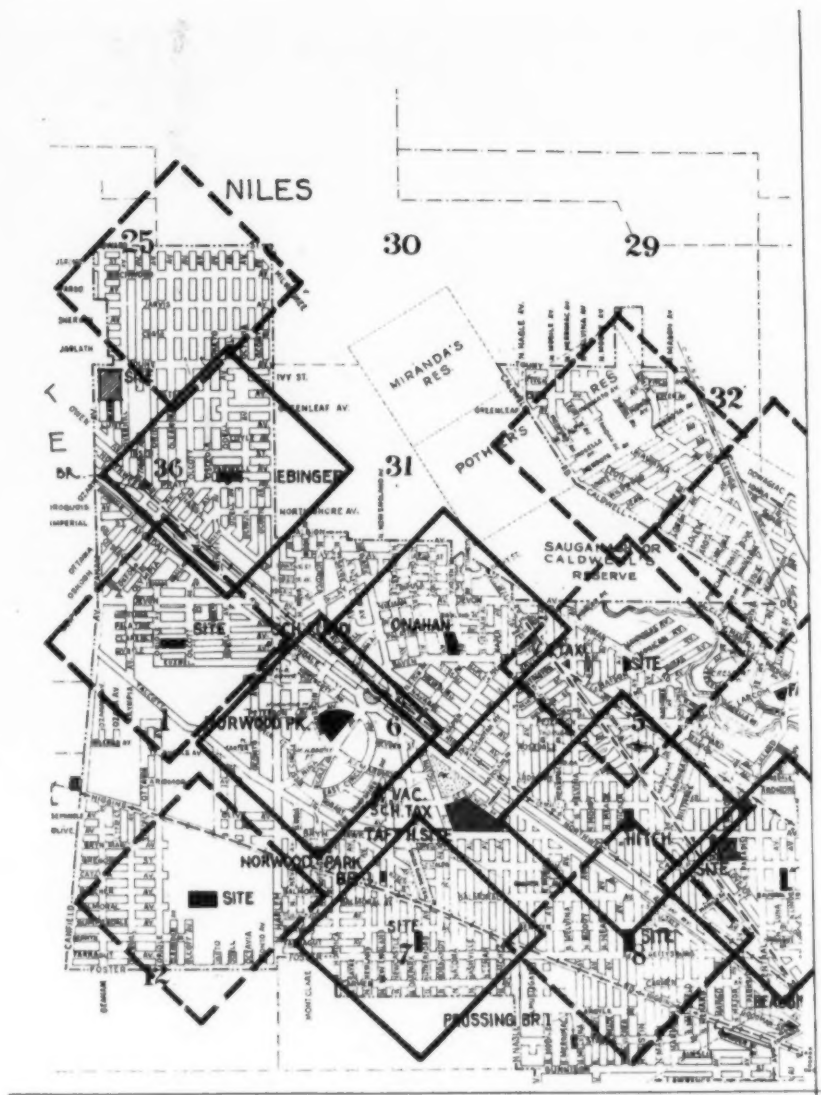
2. **Library.** The library room has been increased from one-half classroom size to full classroom size, and is equipped with built-in cases and bookshelves.

3. **Corridors, lockers, stairwells.** Cloak-rooms have been supplanted with corridor steel lockers. In the older Trumbull School, classroom doors open out into the corridors in such a way that student travel is impeded. In the new schools, classroom doors although opening outward are recessed so that they are flush with the corridor walls when open. The Trumbull corridors are only 6 ft. wide, and so dark that they must be illuminated constantly with artificial lighting. The Trumbull has open stairwells, a source of worry to the principal and teachers. The new elementary-school buildings have 12-ft. corridors with both natural and artificial lighting, and there are no open stairwells.

4. **Basements, toilets.** In the 1937 report of the Hartford survey, Strayer and Engelhardt state that school-building basements "are often damp, inadequately lighted and poorly ventilated, improperly heated, and so located that dust is too readily swept in from the surrounding area." Basements have not been provided in Chicago school buildings since 1925. The older schools have toilets in the basement; there are boys', girls', and teachers' toilets on each floor of the new buildings.

5. **Auditoriums.** A number of the older school buildings have large auditoriums seating more pupils than their entire enrollment. (One principal has submitted year after year in her annual building budget a request that her large auditorium which seats 1,600 children be razed and a smaller usable one erected in its stead.) The present standard for size of auditoriums is a seating capacity equal to one third of the estimated ultimate enrollment in the building. For example, the new Jamieson School has an auditorium seating 400 pupils; the present pupil capacity of the building (i.e., initial unit) is 900; the probable ultimate pupil capacity of this building may eventually be 1,200 or 1,300.

6. **Principal's office.** In former times the elementary-school principal's office rated only half a classroom, with no privacy, few facilities and those poorly located (for example, the telephone). The standard office layout for the new Chicago schools calls for space equal to a full-sized classroom, with two storerooms, a vault, adequate public accommodations including a

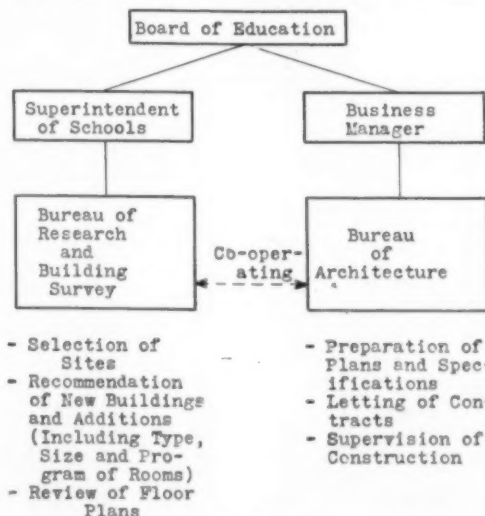


Typical chart used by the Chicago board of education for studying the location of new elementary school buildings.

telephone booth, clerk's office, a private office for the principal with telephone, toilet, and private exit.

Within the past decade or so, there have been tremendous improvements in school-building construction. The credit for this progress cannot be attributed to any one

source. Undoubtedly some credit is due to the scientific planning by bureaus of research and building survey. Much of the progress, however, is traceable to better engineering and construction technique; to the experience of such school architects as Ittner of St. Louis and Christensen of Chicago; and to such national influences as the Committee on Schoolhouse Planning of the National Education Association, the United States Office of Education, and the National Council on Schoolhouse Construction.



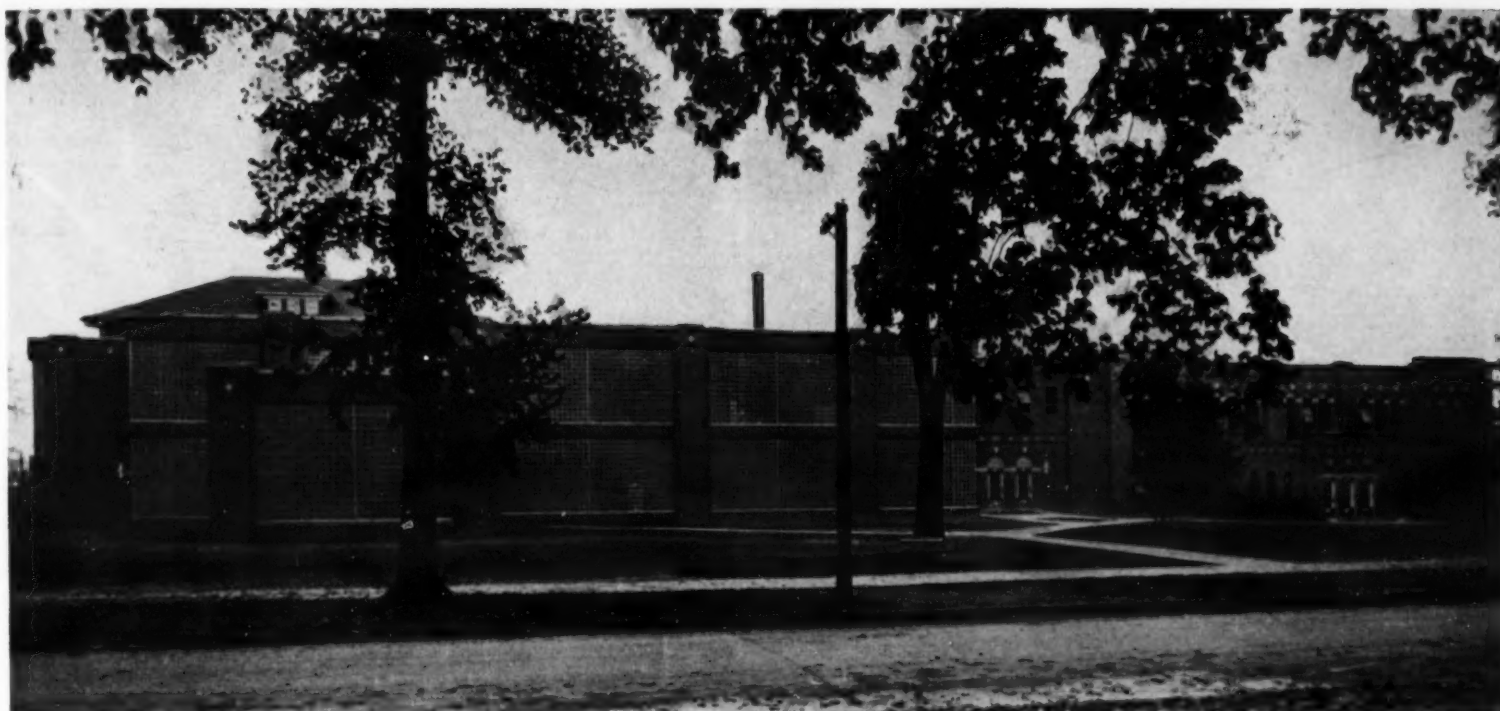
The organization and functions of officials and bureaus responsible for the construction of school buildings in Chicago.

#### SCHOOL PROPERTY IS STATE PROPERTY

The Supreme Court of Missouri, in a recent decision, pointed out that "in Missouri the property of school districts acquired from public funds is the property of the state, not the private property of the school district in which it is located, and that the school district is the statutory trustee for the discharge of governmental funds entrusted to it by the constitution."—Missouri Supp. 102 Southwestern reporter (2d) 909, Mo.

The decision grew out of a case where a part of one district, which was an unincorporated area, was absorbed by another district through an extension of city boundary lines. The extension included one of the school buildings in the smaller district.





*Front Elevation, Public School Building, Elkader, Iowa.—Oren Thomas, Architect, Des Moines, Iowa. The old building is seen at the extreme right. The roof of a separate grade school building is seen at the left.*

## Glass Block Schoolhouse at Elkader, Iowa

D. L. Wood<sup>1</sup>

The most striking progress in the design and construction of school buildings has not been characteristic of the school architecture of the large American cities. It has remained for the small communities to make daring innovations, to try out new layouts, and to use new materials and new types of construction. The high-school building at Elkader, Iowa, is evidence of the truth of these statements. It is up to date in its use of materials,

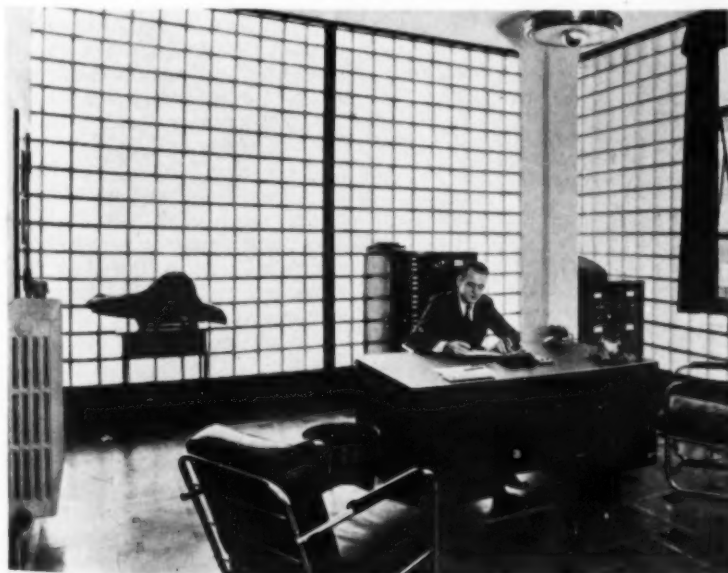
construction and arrangement; it is functional in design and plan.

The planning of the building is the outcome of a study of the local educational program. The administrative and instructional needs of the pupils were the starting point around which the competent architect, Mr. Oren Thomas, developed the individual classrooms and other instructional units and the larger plan with its provisions for pupil circulation and departmental co-ordination. A conscientious board of education gave direction and

sanction to the entire program, so that the Elkader glass-block school building is being marveled at and enjoyed by the children and parents of this progressive midwestern town. Never being content with half-way things, this wealthy rural community has indeed built an edifice which has attracted the attention of educators from coast to coast.

The funds which permitted the realization of the project were made possible by a bond issue, aided by a PWA grant, and the insurance moneys received after the fire which

<sup>1</sup>Superintendent of Schools, Elkader, Iowa.



*A view of the Superintendent's Office, Public School Building, Elkader, Iowa.*



*Auditorium, Public School Building, Elkader, Iowa.—Oren Thomas, Architect, Des Moines, Iowa. The walls are cinder block painted a golden yellow to harmonize with the rich blue of the curtain.*



*Typical Corridor, Public School Building, Elkader, Iowa. The glass blocks above the lockers provide borrowed light from the classrooms.*



*The Commercial Department Classroom of the Public School Building, Elkader, Iowa. The cinder block construction of the partitions is shown.*



*Library Reading Room of the Senior High School, Public School Building, Elkader, Iowa. The concrete columns supporting the floors are clearly shown.*



*Typical Classroom, Public School Building, Elkader, Iowa.—Oren Thomas, Architect, Des Moines, Iowa. Note the cinder block walls, the free standing columns supporting the floor above, the loud speaker.*

destroyed the old high-school building. The total cost of the new building, including equipment when fully completed, will be \$200,000. At the present time only \$85,000 in bonds are outstanding.

The building is unusual because it is the only school house which uses all of the following: (1) glass blocks for all the outer wall construction; (2) mechanical air conditioning; (3) all interior walls made of concrete cinder blocks, exposed and painted; (4) centrally located radio and complete public-address system wired to permit reception in each individual room.

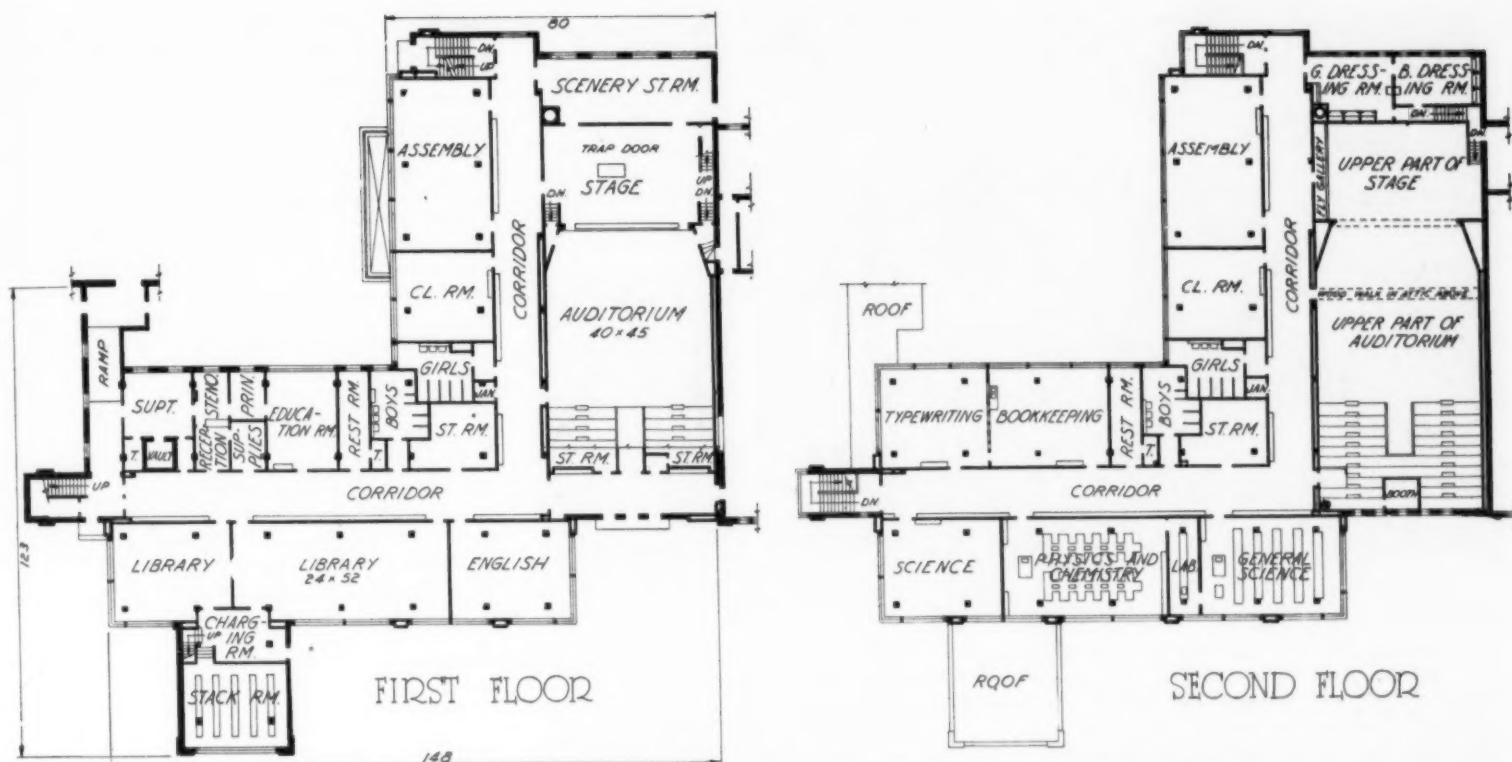
The building houses all departments of the school from the kindergarten through the senior high school. The junior college classes are housed on the same campus in another building several years old. The new building is connected with the gymnasium which was built ten years ago by the same architect.

The outside walls are built of glass block, 8 in. square and 4 in. thick. They are hollow inside, and the air is partially removed, which makes them very poor conductors of heat and cold. They have the resistance to heat and cold which a 14-in. brick-and-plaster wall would have. Criss-cross indentations on the glass diffuses the light rays and prevents glare. The blocks are manufactured so that the amount of light passing through can be controlled; different types of blocks are used on the sun and the shade sides. The blocks are translucent, and there are no shadows any place in the classrooms. Although the glass blocks are built into the structure by the use of waterproof mortar, the glass walls support no structural weight but their own. The floors and roofs are carried by 12-in. concrete-and-steel pillars, four of which are set in each room.

The inside walls are made of cinder block, a recent development in school buildings. The blocks are especially adaptable to wall structure in the classrooms because their rough texture greatly improves the acoustics of the rooms. Plaster is used only on the ceilings and in the restrooms. The cinder-block surface finishes very well with spray paint and gives a very satisfactory appearance.

Glass blocks are used in the upper one third of the corridor walls. This arrangement provides the corridors with sufficient borrowed





Floor Plans, Public School Building, Elkader, Iowa.—Oren Thomas, Architect, Des Moines, Iowa.

light so that artificial illumination is needed only on the darkest days.

The floors are covered with asphalt-composition tiles, which are worked into various patterns in the different rooms. The floors are quiet and very easy to maintain.

One of the unusual features of the building is the seating arrangement in the study halls where large tables are provided for seating six students each. There is a library charging room and stack room, easily accessible to the study halls. The library has a book capacity of twenty thousand volumes, and the stack room has two floors, each with a door opening into the charging room.

The auditorium is built on the general lines of a smaller theater. The floor slopes back from the stage for two thirds of the distance, and then concrete platforms for seats are terraced the rest of the way back. This makes a very fine seating arrangement as there is clear vision from every seat in the entire room. The stage is spacious, permitting a large cast to operate and affording ample room for band concerts and various group activities. In back of the stage is a large room, arranged especially so that it may be used for building stage sets and scenery. Two rooms above are used for dressing and make-up rooms.

The lights in the auditorium are controlled from a switchboard, located in the motion-picture booth. The switchboard, installed at a cost of \$2,100, is used for regulating all stage and general lights in the auditorium. A series of the very latest type dimmers makes it possible to dim or brighten any light or series of lights. Any possible color combination may be secured. Floodlights are mounted in an inclined recess in the ceiling in front of the stage.

The sound system, which is a very late development, makes it possible to announce to any or all of the rooms. Talkback is incorporated so that the office may hear any recitation in any room and make comments if desired. An automatic victrola, which changes its own records, is a part of the



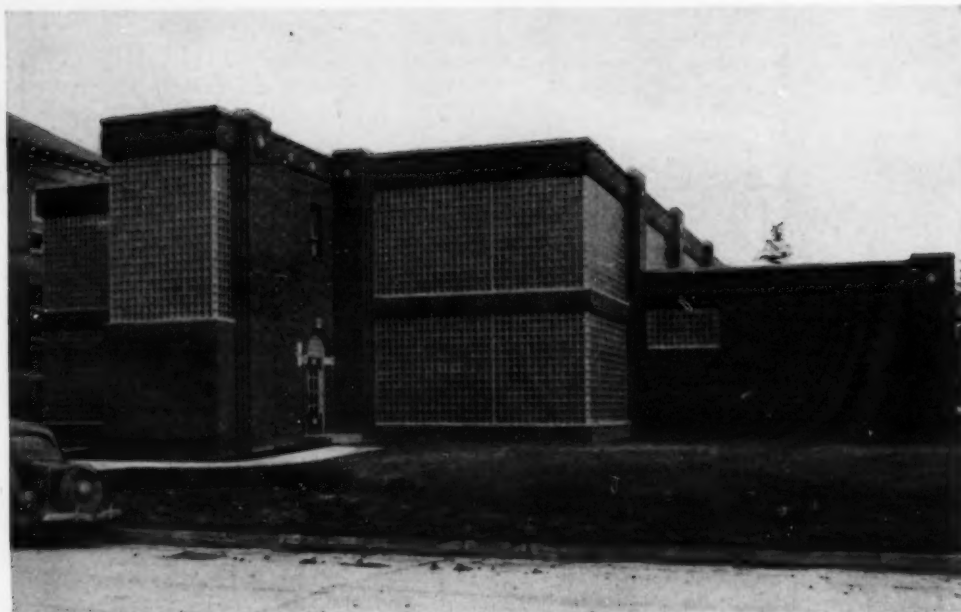
General Science Laboratory, Public School Building, Elkader, Iowa.  
This room has glass block on two sides.

system. The system has a late-type radio-reception unit, with which programs can be picked up and broadcast to any or all rooms. A portable unit enables one to announce in the gymnasium and on the athletic field.

The equipment throughout the building is of the latest type, chosen primarily for serviceability and neat design. The science laboratories are the only rooms which have wood floors. Wood is better here as it is more resistant to the effects of acid than other types of flooring. The tables in the science rooms are treated so that they are resistant to acid. In the chemistry laboratory every

table is equipped with a fume hood so that gases and offensive odors coming from experimental work are carried outdoors. Pipes leading from the laboratory drains are made of glass which is entirely impervious to the effects of corrosive acids. Water pipes are made of brass and are machine-tooled. On the inside they are as carefully made as a gun barrel, which greatly increases their carrying capacity.

The heating plant consists of two stoker-operated boilers which are connected to four large fan-controlled radiator units from which the air is forced through ducts into the rooms.



*End Elevation of the Public School Building, Elkader, Iowa.—Oren Thomas, Architect, Des Moines, Iowa. The glass areas at the right and left represent classrooms. The area in the foreground is a staircase.*

The heating plant is controlled by thermostats in each room. The absence of windows from which to secure ventilation, makes it necessary that the ventilation system be of the force type and that the entire air supply be changed rapidly and completely. The fan controls are quiet and hardly noticeable when the whole plant is in operation.

There is an internal telephone system, with connections to all departments so that the superintendent can get in touch with any department head at any time. There is also a buzzer system which permits of the use of four complete schedules of bells.

The building and its facilities are practical to the highest degree.

## Practical Schoolroom Ventilation

Oscar Vogelbach<sup>1</sup>

Educators, school-business officials, and ventilating engineers are interested in the ventilation of schools, in order to obtain the most healthful conditions for the pupils. This means that they are trying to provide conditions of temperature, humidity, and freshness of air for the classrooms, auditoriums, gymnasiums, locker rooms, toilets, and other special rooms, which will provide comfort and good living conditions, and will contribute to the good health of children.

It is essential to classroom ventilation to provide the following results in order to achieve conditions of the most comfort and health of the pupils:

1. It is important to maintain automatically a uniform temperature in all zones of any or all classrooms.
2. It is desirable to effect a reasonable control of humidity in each classroom.
3. It is essential to circulate the correct amount of fresh air to each classroom and to do this automatically and noiselessly, without draft, free from dust particles, pollen, odor, or other contamination.

This then, being the goal of ventilation and air conditioning for schools, let us examine some of the existing systems to determine how nearly they meet the requirements.

The oldest type of school heating and ventilation still in use is the gravity warm-air

system, which was popular with school designers several decades ago. It has little to recommend it, except low capital investment. It has been decidedly wasteful in the use of fuel, inadequate in heating all rooms uniformly and simultaneously, and unreliable in delivering clean air of definite quantity to all classrooms. Usually, classrooms equipped with this type of system are subjected to wide variations in temperature, and are otherwise drafty. This method cannot be made to meet present expectations in modern school ventilation or air conditioning.

### Open-Window Ventilation

The second method advocated by some is commonly spoken of as open-window ventilation. The method has been the focal point of many arguments, discussions, and written reports. It has been my privilege to design many such systems in one of the eastern states, where ventilation is not compulsory. It has been my privilege and experience, too, to superintend these installations, and inspect many of the buildings periodically, so that I have had an excellent opportunity to serve the effectiveness of the plan. In the earliest installations the engineers provided a normal amount of radiation, consistent with accepted methods of calculating heat losses. Owing to the tendency to open windows to replenish and exchange the vitiated air, and to dissipate the overheated air, it was found impossible to bring the room temperature back

to normal quickly enough to provide effective heating in classrooms. This made it necessary to arbitrarily increase the radiation in classrooms, in an effort to overcome the chilling caused by the opening of windows on cold days. Generally, it was found that temperatures varied greatly on cold days. In a single room the range was from 50 deg. F., with windows open, to as high as 82 deg. F., when the windows had been closed for protracted periods. The point is this: It should not be the function of a teacher to control air and temperature conditions in a classroom. If given such an installation, for all its simplicity, the control of heating definitely becomes a manual operation, and one each teacher must cope with. This method falls far short of our goal.

The third method of school ventilation, and one with which most schoolmen are familiar is the central fan system. This method, more than any other, has been subjected to criticism. It is, from the standpoint of design, the most complex, and one with which the greatest liberties have been taken in design. This has resulted in many installations which have failed in the chief purpose of providing adequate ventilation essential for the protection of the health of school children.

### Drawbacks of Central Fans

Generally, in this type of ventilation, the engineers are forced to modify the design to suit the architectural and structural treatment of the building, to the detriment of such design. It is characteristic that the central fan systems require considerable additional building cube, using valuable floor space for equipment, such as fans, heaters, filters, washers, ducts, and flues. A chief drawback is often reflected in the expedient of using a common duct to all classrooms with a common temperature of delivered air. While modifications of this method have been introduced by the use of "booster" coils, installed in each classroom outlet, this expedient only complicates the design and provides inaccessible spaces that accumulate dust and other foreign deposits.

The use of a single duct to deliver uniform temperature to all classrooms, regardless of exposure, is the chief cause of difficulty in maintaining a uniform temperature and equal air quantities in various classrooms. In every building there are great variations of room location and occupancy. Some rooms are filled with students at times, and others gain heat produced by solar radiation. Still others are cold because they are located in shaded portions of a building.

To meet these differences many systems have utilized elaborate individual ducts to each room, together with complete automatic control, and double-plenum chambers; and mixing chambers have been built in for carrying the temperature of air through each duct as required by each classroom. Good results have been obtained by this method. In general, a central fan system, properly designed, can achieve the results sought. However, the system is more costly in the final analysis than the unit system of ventilation, which is the fourth and final method.

### The Unit Plan

The unit system of classroom ventilation, is generally used at present in both renovation work and new construction. The early installations provided units which were large, piano-like affairs, were noisy in operation, and none too efficient in distributing air and main-

<sup>1</sup>Consulting Heating and Ventilating Engineer, Newark, N. J. This paper formed the basis of an address to the N. A. P. S. B. O., Baltimore, October 12, 1937.



taining temperatures. From this rather crude state units have been improved to their present excellence in both appearance and efficiency. Automatic controls of both the electrical and pneumatic types, have been developed simultaneously. Part of the problem in each classroom is to effect correct temperatures automatically, and it seems to me that the unit system can do so without exceptionally high costs. The latest type of unit ventilator is noiseless in operation, and lends itself particularly well to the action of automatic control equipment. The system is ex-

tremely flexible in operation and simple to maintain. In my opinion, it possesses most of the qualifications necessary to reach the ultimate goal in the ventilation of classrooms.

Finally, it should be added that the type of system employed does not insure ultimate success in obtaining results in school heating and ventilation. It is quite as important that the system of whatever type be properly designed by a competent engineer and installed under his direction. The building problem of a board of education is not completely solved by the appointment of an architect to

design a modern schoolhouse. Approximately 20 per cent of the value of every new building is contained in the mechanical and electrical equipment. In rare cases only is the architect an expert in the engineering aspects of school construction. It seems logical to argue that it is of great importance that a school building shall be comfortable and economical in operation. Why should not the school board ascertain the competence of the engineering service which its architect engages, or by direct arrangement insure that this phase of the work be executed properly.

## Advantages of Hardwood Block Floors in School Construction

Harvey Creech<sup>1</sup>

One of the important factors in modern school construction is the choice of the proper flooring. For in no other type of building must a floor possess such a varied combination of qualities.

Perhaps the first requisites for a school floor are durability and ease of maintenance; it must be of a quality that will insure cleanliness and sanitation. Yet, if the schoolroom is to be bright and cheerful, beauty must not be sacrificed. A school floor must be comfortable, which means that it must be warm, resilient, and quiet. It must be safe—non-slippery, smooth, and fire-resistant. And with all these prerequisites, it must not be excessively costly.

Obviously few floorings can meet all of these demands. In the attempt to find an ideal school floor many materials have been used. Not so very many years ago most schools used soft woods for floors as a matter of course. But while soft woods met some of the demands, they lacked durability, and after short wear began to dent and splinter, resulting in a dangerous condition as well as an unsightly appearance. In addition, they were very difficult to maintain and soon became dirty and insanitary. And, obviously, they were far from fire-resistant.

At one time composition materials of various kinds were the vogue for school floors in certain sections. Some of these new floorings possessed real merit and made excellent floors—but they were expensive. The cheaper composition floors were found to be lacking in durability, often wearing beyond repair in a few years.

Hardwood floors have always been popular for school use, even before the invention of composition flooring materials. In fact, many of the composition materials were developed in an effort to provide a satisfactory substitute for hardwood that would be less expensive.

Oak and maple are the most popular woods for school use, and beech is widely used. Oak with its interesting and varied grain makes a beautiful floor, and in some sections it is the only wood used for school floors. It is also extremely durable—a correctly laid and maintained oak floor will last the lifetime of the ordinary building.

### Durability of Maple

Northern hard maple has long been a favorite flooring for school use because of its durability. Recent tests made on special machines designed to approximate the wear of foot traffic on principal passages by a family over a period of fifteen years revealed that hard maple, with a 3.8 per cent thickness loss at the end of the theoretical fifteen years, stood second in the list of seventeen floor materials tested. Only Tennessee marble tiling ranked higher. The losses of other materials ranged as high as 48.3 per cent. Similar tests made by the Mellon Institute of Industrial Research proved the high resistance of hard maple to indentation.

Regular strip hardwood flooring has always been one of the most economical types for residences and other buildings of wood con-

struction. But in large modern buildings of concrete, fireproof design its use adds to construction costs which detract somewhat from its economy.

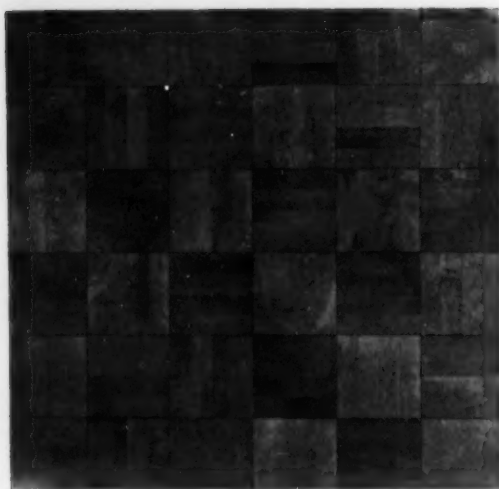
Typical floor construction which illustrates this added cost is that in use in the schools of New York City. Clips are set in the concrete slab, holding in place 2 by 3 in. sleepers. Between these sleepers are placed 3 in. of cinder fill, and on them is nailed a 1 by 4 in. subfloor of softwood. Finally 25/32-in maple strip flooring is nailed to this subfloor. This type of floor construction is more or less standard all over the country where strip flooring is used over a concrete subfloor.

In the effort to overcome these construction disadvantages of hardwood strip flooring an entirely new type of flooring has been developed. This consists of unit hardwood blocks, fabricated from regular strip flooring,



*Maple finished inlaid block floors are attractive and interesting and considerably quieter than ordinary floors.*

<sup>1</sup>Memphis, Tenn.



*The unit blocks are so laid that the edges do not protrude to be worn off.*

fastened together securely with metal splines. The great advantage of this type of flooring is that it can be laid in an asphalt-base mastic direct on the concrete, with no necessity for sleepers, fills, or wood subfloors.

A secondary consideration in the development of this block flooring is the provision of a parquet-type of floor which is not restricted in use, because of cost, to the more expensive buildings. Design hardwood floors are nothing new; they have been popular for centuries. But so long as the installation of such floors meant the laying of individual strips, usually cut to length on the job to form designs, it was necessarily out of reach of most home and building owners.

For these two reasons—lower floor-construction costs and the added beauty of the block design—these blocks have become very much in demand. Architects have been specifying them for schools, office buildings, hospitals, post offices, factories, and many other large areas. As they are available in various grades of oak, maple, beech, and walnut, a suitable flooring can be found for almost every kind of area and in every price class.

#### Costs Compared

A comparison of floor-construction costs of unitwood blocks laid in mastic direct on concrete, and ordinary strip flooring nailed to wood subfloors is interesting. Take again the

standard floor construction for the schools of New York City as representative. In March, 1937, the costs of laying 1,000 feet of strip flooring at prevailing material and labor costs was \$395.98. This represents the total construction cost above the concrete slab, including sleepers, fill, subfloor, and laying the maple floor ready for sanding. Of this amount, \$242.78 is for material; \$153.20, for labor. This means that the net cost per square foot is 39½ cents. The cost of laying maple blocks of the same grade in mastic direct over concrete at the time would have been, as estimated by Wood Block Flooring Institute, 25 cents per square foot—a saving of 14½ cents, or over 27 per cent.

In addition to this initial saving, the elimination of sleepers, fill, and wood subfloor, results in a substantial reduction in the load for which the floor structure must be designed. In the New York school construction, cited above, this reduction would have amounted to 13 per cent. This, of course, means a decrease in other structural weights and costs. If the same ceiling height is maintained in both designs, the use of mastic-laid block flooring will result in a reduction in height from 2¾ to 3½ in. per story in all walls and partitions—a considerable saving in buildings of two or more stories. These supplementary savings will show up in other places, but in reality they should be credited to the finish floor.

The increasing use of unit-wood block flooring in large buildings has aroused interest among homeowners and others who have admired the unusual beauty of this new type of hardwood flooring. To meet this demand a block has been designed that could be nailed over wood subfloors, making these floors practical for homes and other small areas. These nail blocks are also used extensively in school remodeling work, where it is necessary that the new finish floor be laid over old wood floors.

So much for the construction advantages and initial economy of unit-wood block flooring. How does it meet the other demands for an ideal school floor?

#### Other School Demands

First, consider durability and ease of maintenance. Unit-wood blocks of maple possess the same wear and indentation resistance that maple strip flooring does. Furthermore, as there is little tendency to vertical movement



*The blocks are finished before they are laid and present a perfectly smooth floor without cracks.*

in mastic-laid block floors, the edges of the blocks do not protrude to be worn off. This often happens in the case of ordinary strip flooring, as the natural shrinkage of sleepers and subfloors causes the nails to be loosened and allows the edges of the strips to rise somewhat. They are, therefore, exposed to unusual wear.

The fact that mastic-laid blocks present a perfectly smooth floor is also obviously important so far as maintenance is concerned, as no wide, dirt-filled cracks are possible.

In addition to the smoothness of surface and wear-resisting qualities of a wood floor there is one other factor that should be considered when ease of maintenance is concerned. This is the way the floor is finished. One manufacturer is now producing a pre-finished block. The blocks are finished on special machines that do the work with a thoroughness not possible when floors are finished after being laid. A heavy-duty penetrating seal finish is used, and the blocks are waxed and polished, arriving on the job ready for immediate use as soon as they are laid. This thorough finishing job protects the wood from dirt and grime, reducing the problem of floor maintenance to a minimum. The wax used on these prefinished blocks dries to a hard, protective gloss, without being at all slippery.

Mastic-laid block floors have all the warmth of an ordinary hardwood floor, and are comfortably resilient. The layer of mastic which binds the blocks to the concrete does not set but remains yielding and pliable. This gives a cushioned effect which, along with the natural resiliency of the wood, makes a block floor very comfortable underfoot. This is particularly important in the case of a gymnasium floor.

#### Quiet Floors

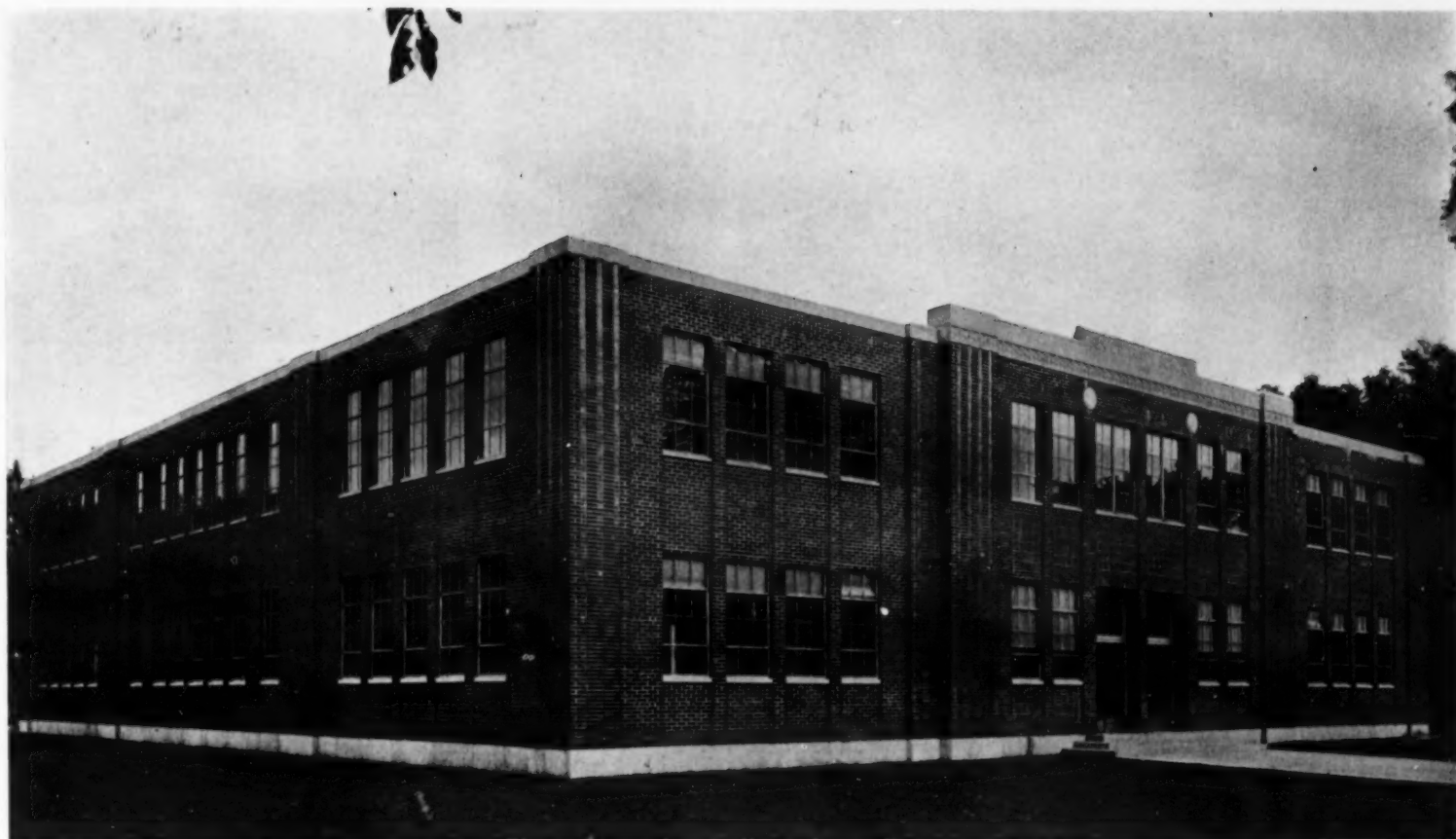
A quiet floor is obviously a necessity for school use. Quiet classrooms and study halls help pupils concentrate more easily and learn faster, and encourage study. Yet, many of the materials used for school floors are anything but quiet, and even strip hardwood flooring is often an offender in this respect. This is due to the fact that there are slight air spaces in and under ordinary nailed construction which act as sounding boards to throw the noise made by clicking heels back into the room. With mastic-laid blocks firmly

(Concluded on page 108)



*Laying a wood tile floor in the Indoor Sports Building, University of Minnesota.*





*General Exterior View, Senior Trade School, Chanute, Kansas.—D. B. Peterson, Architect, Kansas City, Kansas.*

## The Senior Trade-School Building, Chanute, Kansas

L. H. Petit<sup>1</sup>

The new Senior Trade-School Building, at Chanute, Kans., was completed and opened for use in the fall of 1937. It is the culmination of long years of planning by interested citizens of trade training of any city in the State of Kansas. The mortar is scarcely dry between the bricks, but the building is already filled with young men and women who recognize in its courses an opportunity to prepare themselves for a livelihood in the fields of trade and industry.

This new investment in Community enterprise was made possible through a 45 per cent grant by the PWA. The land on which the building stands cost \$10,000. The building itself represents an investment of \$91,306.53, and the furniture and equipment cost \$23,693.47.

The new school, located directly east of the Senior High School and Junior College building, faces west on Evergreen Avenue and is of the factory-type of modern design. With its equipment, it has been termed the finest school of its type in Kansas by school authorities in the field of trade instruction. Planned to relieve crowded conditions in the original trade-school building and to meet new enrollment demands, the building also provides for increased enrollments in the years to come.

The building is two stories high, with an outside frontage of 105 feet and a depth of

115 feet. The small basement, at the rear, houses the heating plant, fire controls, dust-collection bins, and incinerator.

Walls and floors are of reinforced concrete, and the outside walls are faced with high-quality brick in a dull-red shade. Beauty and



*General Metal Shop, Senior Trade School, Chanute, Kansas.*

<sup>1</sup>Superintendent of Schools, Chanute, Kans.



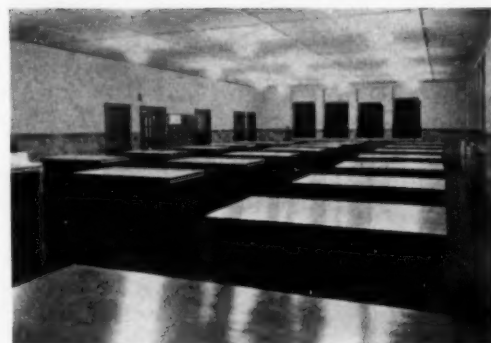
*The Printshop, Senior Trade School, Chanute, Kansas. The type cases and composing stones are located near the windows where the light is ample for these activities.*

simplicity are combined in the main front where contrasting brick and narrow vertical lines of stone attain a touch that gives harmony and balance. The front entrance with double-winged doors of latest design leads through a vestibule to the main corridor and the administrative offices. From Central Avenue a surfaced drive leads to the rear of the building where parking space is provided for automobiles. Service entrances from the rear lead to the auto-mechanics department, the boiler room, and the woodworking-lumber room. The grounds are being landscaped in keeping with the setting of the building.

The interior of the building has been designed primarily to meet student and class

needs. Two years before the construction was begun each trade-school teacher was requested to design an ideal shop layout for his department. After these preliminary sketches had been made, much time was spent in criticizing and in harmonizing them for economy and uniformity of design. The individual sketches were then taken by the architect and combined into the building plans. D. B. Peterson, of Kansas City, Kans., was employed as architect, and W. L. Caswell, of Kansas City, Mo., as mechanical engineer.

On the first floor are located the director's office and the woodworking, auto-mechanics, and machine shops. Each shop opens on a front hallway from which a stairway leads

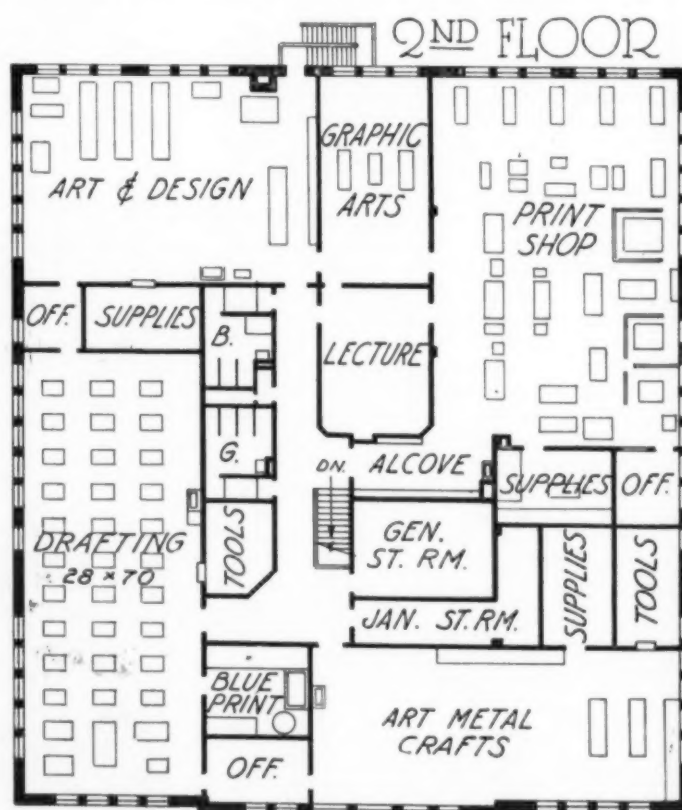
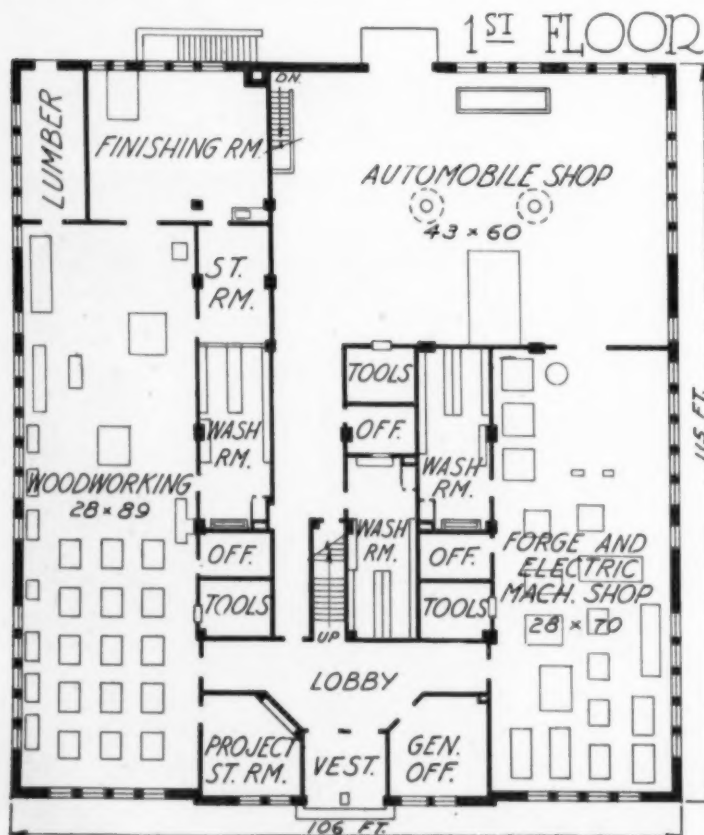


*The Drafting Room.*

to the upper floor. On the second floor are found the art metal, showcard, art and design, drafting, and printing departments. Each department shop is flanked on its inner wall with doors that connect directly with an instructor's office room, washrooms for students, and supply and storage rooms. On each floor are located lecture rooms for the joint use of the departments. An abundance of light has been provided as an essential element in good instruction and as a suggestion for hygienic conditions needed in industry. On two sides of each shop there are closely set rows of high windows of factory type. In addition, carefully placed electric-light fixtures of efficient factory type are arranged to provide an abundance of artificial light on cloudy days.

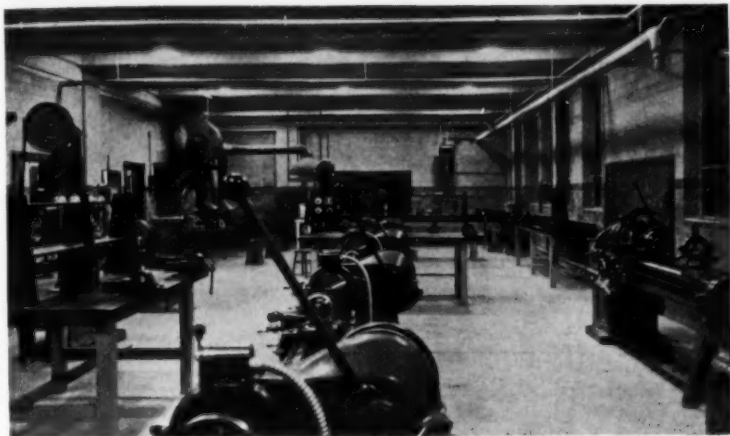
The building is heated by a coal-burning boiler, with automatic stoker. Modern unit heaters, located in each shop, circulate warm air under thermostatic control, and provide for ventilating needs.

The lower 5 feet of all interior walls are glazed tile in contrasting shades of brown, cream, and buff. The upper walls of the shops, washrooms, and toolrooms are un-



*Floor Plans, Senior Trade School, Chanute, Kansas. — D. B. Peterson, Architect, Kansas City, Kansas.*





*The Machine Shop, Senior Trade School, Chanute, Kansas. The equipment is ample to give boys a complete training in forms of working metal from forging to shaper work.*



*Auto Mechanics Department in the Senior Trade School, Chanute, Kansas, has a large open floor area for cars.*

glazed tile in light buff and cream. The general offices, corridors, and hallways are of plaster in faun and sepia tints.

With the exception of the woodworking shop, the floors of the department units were laid with asphalt tile in contrasting color designs. To prevent breakage of delicate tools, the woodworking shop is floored with pine. All surface floors rest on concrete. The auto-mechanics shop and the machine shop have plain concrete floors.

The building is practically free from fire danger, as a result of the "fire-resistant" construction and meets the highest standards of fire safety. The insurance on the building and contents is consequently carried at the minimum rates.

#### The Beginnings

The erection and completion of this Senior Trade-School building is the crowning achievement of long years of working for more adequate training in the Chanute city schools. It all goes back to the December meeting of the board of education in 1908, nearly 29 years ago, when a committee from the Tuesday Reading Club started a movement for the establishment of trade instruction. This committee appeared before the board of education and asked that \$125 be appropriated for the establishment of manual training on a small scale. The request was granted and the women of the Reading Club co-operated by furnishing lumber and other materials. The shopwork was offered at that time to only eighth-grade pupils. It was conducted in the basement of one of the grade schools by an elementary-school principal.

When the present junior-high-school building was erected in 1913, better quarters were provided for manual training. The work grew and increased in interest during the years, and in 1927 a separate trade-school building was erected on the junior-high-school grounds. The growth of the work since that time has been phenomenal. When the original trade-school building was completed, the enrollment was 312 student-hours a day. This enrollment increased every semester, last year mounting to the top figure of 847 student-hours per day.

Ever since the introduction of the trade-instruction program ten years ago, it has been very popular with students and townspeople. When a special election was called in October, 1935, to vote funds for the construction of a new senior trade school, the bonds carried by overwhelming vote. This

fall the total enrollment in the junior and senior trade schools is 1,023 student-hours per day.

The Junior Trade School operates in connection with the Junior High School and offers exploratory and trying and finding courses in a large number of shop departments. These include home mechanics, printing, woodworking, general metal, auto mechanics, machine shop, mechanical drawing, ceramics, and agriculture. A close check is kept on the student's progress in each course to determine his adaptabilities and fitness for future work.

#### The Academic Work

On entering the senior high school the student may elect to spend a full three years in a given shop, on completion of which training coupled with the required academic work, he is given a trade-school diploma as well as a high-school diploma. Courses are offered in woodworking, cabinetmaking, patternmaking, auto mechanics, machine shop, printing, art and design, architectural, mechanical, and engineering drawing, and graphic arts.

In addition to the strictly mechanical side of the shopwork, the student is required to do a certain amount of research reading and to make written reports in the field of his interest. The Kansas State Board of Educa-

tion approves the work done in these shops on a full-credit basis, hour for hour the same as academic work. Most of the students working for trade-school diplomas are taking the work as a terminal course, although completion of the course entitles a student to college entrance, particularly in mechanical and engineering schools.

#### Short Courses

Besides the students who are working for a trade-school diploma, the school offers short courses to students who desire only the cultural advantages that a given shop may offer. These are credited with certificates for the earned number of hours' work. Courses also have been added which will give credit on the junior-college level.

In conclusion, it should be pointed out that the program outlined has developed in a city with an approximate population of 10,000. With several industries, and surrounded by a fertile farming region, the community each year has given employment to many of the trade-school graduates.

It must finally be said that the trade-school program in Chanute has been developed to its present point through the efforts of a far-seeing board of education, backed by an energetic community with a healthy interest in the future of its boys and girls.



*The Woodworking Department, Senior Trade School, Chanute, Kansas. The open space in the foreground is provided for assembling large projects.*

# Planning Better Plants for Upper Secondary Schools

John W. Harbeson, Ph.D.<sup>1</sup>

The term "upper secondary school," is interpreted in this paper to cover the senior high school and the junior college. The two years of the junior college have been recognized both in state legal enactments and in professional literature as a part of the secondary-school system. In a few communities they are organized as isolated two-year units and located on separate campuses. In the vast majority of cases, however, they are organized on the same plant with the senior high school with a greater or less degree of unity and articulation between the two organizations. Whether housed in a separate plant, however, or organized in connection with the upper high-school years, the requirements of the physical plant remain virtually the same in both situations. The junior-college years carry to completion the program of general education started in the high school, and it has been demonstrated in many communities that the upper high-school and the early college years require virtually the same type of plant and general equipment.

## Better Classrooms

### I. Deficiencies Pertaining to Classrooms.

In the traditional high-school and junior-college plant the average classroom is too small for the requirements of modern education. A generation ago, when the enrollments in these schools were small, a group of 25 to 30 was considered an unusually large class. In the present day, however, classes of such diminutive size constitute an unnecessary expense in public education. The studies of Dr. Earl Huddleston and others have shown that satisfactory work can be done in classes of twice the traditional size. Moreover, the pressing economies of the present economic situation make impossible an educational program of the extent now carried on without the economies gained through large-size classes. Modern upper-secondary-school plants should be equipped with classrooms capable of taking care of a minimum of 40 to 50 students. This means rooms with a minimum dimension of approximately 625 sq. ft. Moreover, in every department there should be provided one or two rooms capable of taking care of at least twice this number. Especially on the junior-college level many classes can be profitably organized with an enrollment of from 75 to 100 students, and rooms should be provided to meet this situation. Large rooms are also necessary for the purpose of bringing together one or more

smaller classes for discussions of common interest.

Another modification which should be made in the traditional classroom concerns the seating arrangement. The former practice of seating the students in rows of seats attached to the floor presents too formal and artificial an arrangement for a social atmosphere. Instead of the immovable desks, armchairs should be provided which can be arranged in whatever manner will break up the traditional rigidity and formality of the classroom and promote free activity of the group. In many courses small groups within the classes will be working on separate problems, and it is desirable occasionally for these to work apart from the rest of the class.

Another glaring defect in the traditional school plants appeared in the improper lighting facilities. The modern classroom should be provided with scientific facilities for natural lighting and also with artificial lights. The conservation of eyesight is an essential part of a modern program of education.

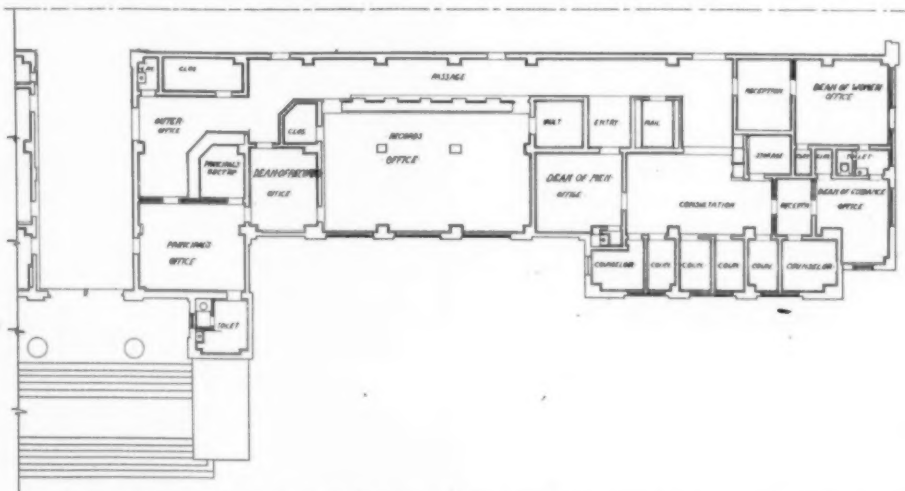
The rigid departmentalization of the traditional school organizations has been reflected in the construction of the plant. Certain corridors or groups of rooms have been reserved for special departments to the exclusion of utilization by other classes. This arrangement has not only militated against a proper development of the curriculum and a program of educational activities on the part of the students which cuts across the subjects of the curriculum, but also has constituted an unnecessary burden upon the taxpayer. Under the old departmental organization each teacher was provided with a room of his own, which was, therefore, unused for class purposes during any free periods on the part of the instructor. Under a modern organization con-

tinuous and universal use of all of the classrooms is imperative. This means that few if any teachers can claim the exclusive use of classrooms. A provision for teacher conference rooms, which will be discussed under another heading, should make possible the assignment of the rooms as needed indiscriminately among the faculty.

The traditional school plants were particularly defective in facilities for music, art, and dramatic instruction. The cultural and avocational value of these subjects must not be lost sight of in the erection of the plant. A provision should be made for music instruction for large instrumental ensembles as well as vocal groups. Large and well-lighted art studios with ample wall space for exhibits are an essential part of a modern program of instruction in art. In the field of dramatics, a little theater should be erected with complete stage equipment and seating capacity for approximately two hundred. This gives opportunity for creative writing in the field of dramatics and the presentation of original plays before interested groups of students.

## Science Laboratories

II. Deficiencies Pertaining to Rooms for Scientific Instruction. In the traditional upper-secondary-school plants provision for scientific instruction was usually accompanied by one of two glaring and diametrically opposite deficiencies. Either there was too little provision for laboratory work, or there was too much. In either case, there was almost no provision for scientific instruction through demonstrations before large groups. The modern program of science instruction demands fewer laboratories than were provided a decade or two ago, in increased opportunities for instruction through demonstrations. The average upper-secondary-school student who is interested in scientific instruction only as a part of his general education, does not need the detailed laboratory procedure provided in the secondary-school plant of more recent con-



Administrative Unit of the Horace Mann Building, Pasadena Junior College. The office provides for three main units, that of the principal, the dean of records, the deans of men and women, and the dean of guidance.

<sup>1</sup>Principal, Pasadena Junior College, Pasadena, Calif.



struction. For purposes of general education, probably more rapid and more efficient progress can be made through observations of demonstrations on the part of the instructor than through the following of detailed instructions in a laboratory manual. These demonstration classes in science can be of from 100 to 150 in size. On several days of the week they can be broken up into smaller groups for classroom discussion. Moreover, experience is demonstrating that the general introductory or survey course in science, cutting across as it does the major subjects in physical and biological science, constitutes a better orientation in science than the traditional organization of material in subjects confined to narrow segments of the major field, such as physics or chemistry. For the student who is not majoring in science, a general introductory course in physical science and one in biological science, followed possibly by a sequence subject-matter course in one of the major scientific fields, constitutes as much scientific education as is needed for purposes of general education. For the student majoring in science and related fields, however, increased facilities should be provided for laboratory courses following the general introductory courses. These laboratories should be larger in size than those of the traditional upper-secondary-school plants and equipped for groups of from 70 to 75 students. One or two instructors can meet the needs of such a group, especially when provision is made for paid student assistants from colleges or universities within the general location, where such are available, or through paid students of junior-college years. In this way, a great economy can be effected in scientific instruction without loss of educational values. The modern upper-secondary-school plant, therefore, should provide for a large demonstration lecture room in physical science and one in biological science, together with a relatively small number of large and well-equipped laboratories.

**III. Deficiencies Pertaining to Visual Education.** Provision for visual education and for aids to instruction have been neglected in the traditional high schools. The average classrooms either make no provision for projection equipment or such provision has been made in rooms not adapted to those purposes and unsatisfactory as to size. In each major field a large room should be available for visual education. A large selection of movie sound films is now obtainable in almost every field, and this development is certain to experience great progress in the future. These rooms should have a seating capacity of approximately 200. In this way, several classes can profit at the same time and without loss in efficiency. Moreover, the classrooms should make provision for visual instruction through displays, exhibits, etc. In the home-economics department a display room of modern household equipment would prove a substitute for much of the detailed and meaningless laboratory procedure provided in the old-style cooking rooms. For purposes of visual education, also, the modern upper-secondary-school plants should be provided with a museum. This could be built up and modified from year to year by creative activities and contributions of the students. Valuable instructional material can be provided for every department through educational films, displays, and demonstration exhibits.

#### The School Library

**IV. Deficiencies with Reference to the Library.** In no respect have the deficiencies

of the traditional school been more apparent or harmful than in those which concern the library. The reading rooms have been too small, and facilities have not made possible a proper cataloguing or supervision of the library by trained assistants. In the modern educational program the library plays a more important role than in the past. A large part of the activity program on the upper secondary level consists of directed learning in a library situation. This makes absolutely imperative not only for large and well-selected lists of books, documents, etc., but also provision for their use by all students. The reading room must be spacious and well lighted. A complete card catalogue must be accessible to the students. A trained librarian with workroom and office space should be in charge. Stacks should also be made accessible to the students and housed apart from the regular reading room. The entire student body, through the school library, should become acquainted with the management, organization, and use of a well-equipped library. Instructors will occasionally find it advisable to transfer classes to the library for directed study. Provision should also be made for the removal of books to classrooms as needed.

Our point of view in the past has prevented this logical development of the library. We have visualized the instructor as an expert within his field, whose function was to give his students an education. In the larger secondary schools the instructor was assigned subjects within a very restricted area, in which he had probably worked out a master's or a doctor's dissertation. Today we realize that no one can give another an education. The best we can do is to make possible conditions which will facilitate self-education on the part of the students. Under such a program students in any given class may, on account of their wide range of interests, be working on problems in which the instructor cannot claim to be a specialist and in which he is probably not entirely prepared. So long as he understands, however, the proper requirements for a good learning situation and makes provision for the exercise of initiative and self-directed study on the part of the student, the academic shortcomings of the teacher do not constitute a serious handicap, provided, of course, he is willing to become a student along with the class.

#### The Administrative Offices

**V. Deficiencies with Respect to Offices.** In many of the old plants, offices were arranged to make an impressive appearance rather than to serve the school. In the larger schools the principal and his assistants were provided with separate offices with waiting rooms adjacent in which clerks spent much time answering unimportant questions.

In the modern upper-secondary-school plant the offices are arranged with reference to a plan. The central feature consists of a large records office into which open the offices of the administration staff and in front of which is one common waiting room for all. The clerical staff is located in the central records office where they can work without interruption. A single window is sufficient to answer inquiries. Each administrator is assigned a clerk responsible for answering his telephone calls. Through an intercommunicating system the clerks may be available on a moment's call. Such a plan makes possible a maximum of service with a minimum of expense. By placing the administrators' offices adjacent to the records office, administrators in their

conferences with students or parents have ready access to the records and can have full data in discussing with the problems that arise. This type of office arrangement is followed in the Pasadena Junior College.

Moreover, the old school plants made virtually no arrangement for a guidance program. Such provision should be made in close proximity to the records office, and should include space for each counselor.

Another deficiency of the older plants was the lack of adequate conference rooms for teachers. The more extended and constant use of the classrooms makes it impossible for a teacher to avail himself of a classroom for student conferences. On the other hand, such conferences are essential, and provision should be made through a teacher's room in which each teacher is assigned a desk where he may keep his materials under lock and key, and at which he may hold conferences with students. There should be approximately one such room in every major department in the school. From fifteen to twenty teachers can be provided for by such an arrangement, two teachers being assigned to one desk.

#### Study Laboratories

**VI. Deficiencies with Respect to Study Laboratories.** The typical study hall of the traditional high school was little more than a detention room, in which the function of the instructor in charge was more or less that of a police officer. The study hall in the new educational system must give way to what might be called study laboratories. Groups of from 50 to 75 can be provided for in such rooms, and the instructor in charge should be a person especially trained in educational psychology and guidance. Provision should be made for the transfer of books from the general library to the study laboratory as needed. In this situation, the keeping of order sinks into the background. The instructor has no time for the correction of papers or the reading of magazines, and he uses his time in helping students in their study problems. Such a position requires exceptional ability, and the director of the study laboratory should be paid a larger salary than that of the regular faculty as the position requires greater ability and training as well as harder work.

**VII. Deficiencies with Respect to Student Activities.** Most traditional high-school plants have made fairly adequate provision for athletics. There is, however, a dearth of opportunity for a social program and other activities of less spectacular character. The need for a social hall is apparent from the usual practice in many schools of holding their social functions in country clubhouses and other localities where adequate chaperonage becomes impossible.

Student-body offices and a journalism suite are as essential in the secondary school as are classrooms. The fact that most of the students are living at home, accentuates the need of adequate provision for a social program. Without such provision, there is little opportunity for students to become acquainted with each other or develop much of a social life upon their campus. The usual practice is for students to go from class to class, to study hall or assembly, to lunch in the cafeteria, and when the day is over, return home without meeting many of their fellow students. At Pasadena Junior College a student union has been erected to include a soda fountain, student offices, the college bookstore, and the college bank. Plans have been drawn for a

(Concluded on page 108)

## THE AMERICAN School Board Journal

Edited by Wm. Geo. Bruce and Wm. C. Bruce

### What is Modern in School Architecture?

**A** REVIEW of the progress made during 1937 in school-house planning and construction can record little more than growing tendencies; actual changes over the previous year are hardly discernible. The year just closed has seen the last of the extensive federal grants under PWA, and unless Congress decides to provide large sums under a federal building program the year 1938 will see the school districts thrown more and more upon state and local resources for the construction and rehabilitation of their school plants. Certain it is that the needs for new buildings have not been filled. In the larger cities, as well as in the villages and rural communities, the needs created during the depression years have not been overtaken, and the constant shift in population in the cities as well as the universal growth of secondary-school enrollment, will make the demands for buildings as constant in 1938 as they have been at any time since the war. This fact coupled with the ever-growing public demand for enriching the elementary- and secondary-school programs indicate that 1938 will be an active year in schoolhouse construction.

In the design and planning of school buildings the modernistic trend has gained a stronger foothold during the past year as the younger architects who are strongly committed to the functional idea and to experimentation in the use of new materials have been able to point to satisfactory buildings in daily use as expressive of their social and cultural philosophy. The older conservative group, committed to the historic styles has suffered in the argument that concrete, steel, and brick should be used more honestly and more frankly in design. Whether the schools will gain ultimately from the new types of walls and roofing and flooring materials, from new mechanical devices in heating and ventilation and lighting remains to be seen. There still is much in the argument that a public building like a school involves a public responsibility and that neither school boards nor architects are justified in making radical innovations unless they are certain that the dollar spent will bring equivalent value in ultimate use and utility.

In the planning there has been a gratifying departure from the old and hard conventional types of teaching areas, and genuinely new ideas in the layout of classrooms, laboratories, shops, and home-economics rooms have been tried. There has been commendable growth in the planning of administrative suites and departments which have an adult community as well as formal instructional use. The growth has extended beyond the floor plan of room units and points to greater variety in the general arrangement as well as exterior appearance of buildings. It is more than likely that measures of building efficiency like that set up originally by the "candle of efficiency" must give way to entirely new and functional criteria in which flexibility is an offset to what has been considered waste of space.

Certain it is that the more recently completed school buildings express a deeper understanding of the socio-educational processes carried on within their walls and that they show

a greater democracy in planning. Architects and school superintendents are giving up much of their autocratic authority and are permitting teachers and principals to express their wishes for efficient instructional areas.

In the mechanical equipment of school buildings, there has been little growth. In ventilation, unit heaters and unit ventilators have been perfected in the direction of greater economy of operation and wider adaptability to conditioning air in both very mild and extremely cold weather. The idea of air conditioning has grown enormously and the tendency toward making the apparatus function the year round has been clearly evident.

Progress in the artificial lighting of schoolrooms has been harmed by the engineers who have assumed the authority of ophthalmologists and called for radically higher light intensities without sound psychological and medical reasons.

The interiors of school buildings are growing steadily in attractiveness and there is reason to believe that the recent tendency for use of color and for variety in finish of walls, floors, etc., is a worth-while development for education. Some of the experiments made in California are particularly promising.

The immediate problem in schoolhouse construction arises from the financial situation in many communities where the after effects of the depression have not spent themselves. In rural areas the ancient difficulty of districts which are too small continues, and hope for improvement can come only through legislation like that going into effect in Ohio and Pennsylvania where the small districts are passing out of existence. While the sentiment for continued federal aid is strong, the difficulty of securing a favorable vote on bond issues is growing less and less, and the tendency to obtain levies for immediate payment of capital outlays is growing. Better results in financing cannot be hoped for until there is stronger state control of both financing and construction through divisions of schoolhouse planning in the state education departments.

### Mr. S. L. Smith Retires

**T**HE encouragement given to the cause of social welfare in this country through private benefactions exceeds in volume and effectiveness all the past gifts of the princes and nobles of an old world. The cause of education in the United States has been promoted especially by bequests and philanthropic gifts.

In expressing admiration and gratitude for the splendid foundations that have been created, there is a tendency to underestimate the genius which is applied to the administration of these large funds. At first blush it would seem that the expenditure of moneys is an easy task, more especially when the demands and needs are so obvious. But to spend money so wisely and judiciously as to secure the greatest measure of service for a cause like education requires exceptional talents.

The retirement of Samuel L. Smith, who served as the southern director of the Julius Rosenwald Fund for a period of seventeen years, brings to mind the fact that an exceptional task requires the services of an exceptional man. A scroll presented to Mr. Smith in November last, by three institutions of learning, contains this tribute: "A wise and genial leader, a friend of the lowly, an apostle of social and racial justice."



The founder of the Julius Rosenwald Fund decreed at the time of making his great benefaction that the Fund should be entirely spent within twenty-five years after his death. This condition was imposed in the thought that conditions in the economic and social field change from time to time, and pressing needs existing at one time may have been entirely appeased at another. Thus, even a generous foundation must be limited to the element of time and changing conditions.

A dinner given at Nashville recently, in honor of Mr. Smith, brought forth tributes from the presidents of the Fisk University, the Meharry Medical College, and the A. and I. State College. Likewise, praise was extended by Lessing J. Rosenwald, a son of the founder, and Edwin R. Embree, president of the Fund. At a second dinner, Peabody College and its staff paid tribute to Mr. Smith. The *Nashville Banner*, in commenting upon the work performed by Mr. Smith, said:

The Rosenwald Fund, during Mr. Smith's supervision of its activities, has aided in the construction of 5,334 Negro schools in the fifteen states of the South, which have furnished accommodations for 600,000 students. The activities of the philanthropy and its southern director, however, did not stop there. The children of the White Race have benefited too. Correct principles of schoolhouse construction have been made available free of charge to rural communities, and well-lighted and ventilated schoolhouses, properly planned, dot the South today as additional evidences of a generous philanthropy, wisely administered. This schoolhouse-planning activity has been carried on through the Interstate School Building Service, established by the Foundation in 1929, and its studies in schoolhouse construction, it is gratifying to know, are to continue available to Southern communities.

While Tennessee and the South expressed its gratitude to a great benefactor, it was conscious of the service rendered by the man who administered this philanthropy of wealth so wisely and so well. The educators of the Nation at large may well join the South in extending their appreciation for a great task efficiently performed.

### Newer Phases of the Lowest Bidder System

IN THE awarding of public contracts the laws usually provide that the lowest bidder must be recognized. A strict application of this rule has led to some embarrassing situations. The lowest bid, expressed in dollars and cents, may not in the end prove to have been either the most economical or the most advantageous.

The safeguard which is frequently applied is to specify that the bidder must be responsible in a financial sense. Another clause which has been exacted in recent years is that, in construction contracts, the bidder must give satisfactory proof that he is industrially equipped to carry out his end of the bargain to the fullest. The accompaniment of a surety bond insures protection, but it does not prevent delay and annoyance. Thus, the circumspect awarder of a building contract exacts the assurance that the bidder is equipped with the necessary paraphernalia to complete the work in a satisfactory manner.

The new phase which has entered into the picture is that of labor. Organized labor has come forward to insist that in all public work, the contractor pay the union scale of wage and observe the union hours. In a New England city the question has come up to the school authorities in a concrete way, causing an embarrassing situation. The school board has before it the union demands, and is confronted with the letter of the

law which reads that the lowest bidder must be recognized and makes no mention of any hours scale or of wages.

Where state legislatures and municipalities have decreed that all public contracts must recognize organized labor, or at least adhere to an established wage scale, the difficulty is readily settled. But in the absence of such laws and regulations, it will prove to be a rather hazardous proceeding to violate the lowest-bidder rule.

The problem cannot be settled unless the legislatures put on an equal basis all contractors, at least for construction jobs. This is readily possible through the recognition of established wage scales and through the enforcement of industrial codes which govern all employers and which recognize also the rights and interests of the consumer.

### Taxpayers' Associations and School Interests

THE advent of the so-called taxpayers' association is manifest in various sections of the country. Since the depression period they have grown up like mushrooms and have continued to grow in number and in intensity of activity.

Since the school interests demand the larger fraction of the local tax levy, the tax associations center their scrutiny upon school budgets as mediums through which large savings may be effected. While in many instances the citizens identified with tax pressure groups manifest a co-operative attitude toward school interests in suggesting revisions in the local educational programs, they, nevertheless, in all instances demand drastic cuts in school costs.

A survey recently made by Helen Halter of the New York State College for Teachers, Albany, N. Y., finds that 601 superintendents regard the taxpayers' association as a menace to education.

Those who have observed the tax pressure groups at a close range know that they draw a pitiful picture of the poor home owner who is unable to meet his obligations and fail to mention the rank and file of taxpayers who are willing and able to meet every reasonable demand for the support of the schools. It is equally well established that in many instances the facts regarding the administration of the schools have been grossly distorted. Where economies can be effected without impairing the efficiency of the schools this should and must be done. But it will be a sad day when the tax thinkers are allowed to dominate the school budgets.

The conclusions which Miss Halter has reached are: (1) that the objectives of most taxpayers' associations are concerned with cutting expenses rather than reforming educational financing, (2) that the methods of the associations consist of publicity for distorting school data rather than publicity for authentic investigation, and (3) that the associations are led by selfishly interested groups rather than by representative citizens.

This unquestionably summarizes the situation with reasonable accuracy. We are not, however, inclined to see any real menace to education in the taxpayers' association. The citizens have the right to organize against what they may deem an unreasonable and exorbitant tax levy. In the face of that fact it becomes the duty of the school authorities to stand firmly and unflinchingly for all that the educational interests are reasonably and equitably entitled to. The decision will rest upon the fair-minded citizen — the taxpayer.

# Trends in School Planning and Construction in Minnesota<sup>1</sup>

Geo. F. Hoppe<sup>2</sup>

A study of 75 PWA school buildings in Minnesota indicates that, although many innovations have entered into school construction and planning, there are many items that have been standard over a number of years because school buildings are built to withstand hard usage with the least possible maintenance. This condition tends to make school administrators and architects very conservative when specifying the details of new buildings; therefore, standardized items of flooring, roofing, trim, and brick are the rule and not the exception.

For classroom floors, 58 of the 75 schools studied used only maple No. 1 or 2 grade, 4 used some type of mastic tile, 8 used maple with mastic for special rooms, and 5 used maple with linoleum for special rooms.

Of the 12 non-PWA schools built in the years 1931-1933 included in this study for comparative purposes, no school used mastic floors exclusively, but 8 employed it in some capacity. This continued choice of maple for flooring would suggest that these substitutes, whose original cost is often less, have not been accepted for school floors. It was found that terrazzo is almost universally used for corridors; 37 architects specified this material, 9 specified cement, 6 used maple, and 10 employed other materials such as mastic and linoleum.

Much has been done in the past few years by architects and engineers to introduce fabricated steel in the design of both homes and public buildings, but this trend was not discovered in the PWA school buildings in Minnesota. No buildings were constructed with steel window frames or trim except for gymnasium and basement windows. Pine was specified for outside window frames and door frames of more than 75 per cent of the buildings. None of the buildings used steel inside trim, although metal is used in many new homes and offices. In buildings of the better type of construction the hardwoods, birch and oak, were used. No outstanding preference was noticed as 29 schools were finished in oak and 31 were trimmed with birch. The median of the unit cost<sup>3</sup> for the schools using birch trim was 31.4 cents per cubic foot and for oak, 37.7 cents a cubic foot. This suggests that oak trim is found in buildings having a greater unit cost. This is not always true because 8 schools, having a unit cost greater than 60 cents a cubic foot, employed birch trim, and only 3 in this category used oak. Four schools costing less than 30 cents per unit had inside trim of oak and 14 schools in this last group used birch for trim. The remaining schools were trimmed in fir and pine. The 12 non-PWA schools examined indicated a decided preference for oak; 10 of the 12 schools were trimmed with that wood.

## Roofs and Weather Stripping

A check of guarantees on roofs for these buildings showed an interesting variation. Of

<sup>1</sup>This is the second of two articles on Cost and Construction of PWA school buildings erected in Minnesota under the 1933-1936 programs.

<sup>2</sup>Superintendent of Schools, Pine Island, Minn.

<sup>3</sup>The computation of unit cost was demonstrated in the article which appeared in the August issue of the SCHOOL BOARD JOURNAL, p. 56.

the total of 75 it was found that 65 had some sort of guarantee which varied from 2 years after acceptance of the building to a 20-year bond. The findings are listed as follows: 24 roofs bonded and guaranteed for 20 years; 18 for 15 years; 11 for 10 years; 5 for 5 years; 7 for 2 years. A great number of architects and boards of education believe that money spent for a well-constructed roof with a long-time guarantee is a measure of maintenance economy.

Weatherstripping of modern school buildings has become part of the initial construction especially where the winter climate is as severe as it is in Minnesota. Fifty of the 75 buildings had it specified. At the present, numerous boards of education are having old buildings weatherstripped because of the guaranteed saving in the consumption of fuel and the greater comfort afforded by the elimination of drafts and dust.

Acoustical tile ceilings in classrooms, gymnasiums, and corridors are becoming essential to well-planned construction. The function of this material is to reduce to a minimum the reverberation of sound. The use of this material produces an atmosphere of quiet which seems to increase attentiveness and reduce nervous tension. All but two of the auditorium-gymnasiums built used acoustical tile for ceiling covering, and this material was used wholly or partially in the classrooms and corridors of 28 new schools where artistic treatment greatly enhanced the beauty of the rooms. Its use as a finish ceiling in classrooms is new in Minnesota for not one of the 12 non-PWA schools built in the years 1931-1933 used it for this purpose.

The design and outside construction of a school building are features which usually appeal to the average citizen because in many communities the school is the only edifice which is distinctively a monument to civic pride. The usual method of obtaining distinction was through the use of cut stone for trim. The PWA buildings did not show the use of great amounts of cut stone, but many ingenious designs in brick or combinations of cut stone and brick. Much cast concrete was used to replace cut stone as it was found to be cheaper and also durable.

The monolithic type of building construction is being projected into the school-building picture. Time will tell if this type of construction can withstand the 150-degree changes in temperature experienced in the Minnesota seasons. Many of the new buildings have a touch of the modernistic design which is so prevalent in the architecture of today.

In general, elementary buildings and additions are predominant in the PWA school-building program throughout the nation. This condition is not true in the program in Minnesota as it is partially an adjustment to the expanding six-six program which requires greater high-school facilities because of the enriched curriculum offerings. Only 13 of the 75 buildings were built exclusively for elementary use.

## Gymnasiums and Auditoriums

Fifty-eight new gymnasiums were constructed and all but 2 are of the convertible

auditorium type; 28 have a separate stage and 28 have a stage on the gymnasium floor. Although there has been a great deal of controversy on the relative cost of each type, no great difference was found. The average cost per cubic foot based on "education content" and "general contract" cost was 33.8 cents for the separate-stage type and 29.4 cents for the floor-on-stage type. The latter shows a lower cost per cubic foot but a greater total cost for the unit because of the additional cubical content necessary in this construction. The following tabulation gives a clearer picture of the distribution of costs for each type:

Education-Content Cost per Cu. Ft. of Entire Building	Separate-Stage Type Number of Cases	Floor-on-Stage Type Number of Cases
\$ .10-.19	2	4
.20-.29	10	9
.30-.39	8	12
.40-.49	5	1
.50-.59	1	
Over .60	2	2
Total .....	28	28

No attempt has been made to show the superiority of one type over the other. Each has its merits and the local situation necessarily decides the choice.

Because the enrichment of the curriculum under the six-six program calls for additional nonacademic classrooms, 14 music rooms, 24 home-economic departments, 35 libraries, 33 laboratories, and 18 suites for commercial education were added. It would be safe to say that during no other time in school development has there been such a determined trend to broaden from the three "R's" into a richer field of practical education. A few years ago we found schools abandoning home economics and industrial arts; now we find the pendulum swinging the other way.

Many outstanding features were noted in checking the educational content planning. Two schools had music rooms in which the floor was a series of levels which makes an ideal situation for the conducting of vocal and instrumental groups. One junior-high-school building had a "little theater" in the basement which could be used by class groups or community groups for dramatization.<sup>4</sup>

It was found that many schools have a community room. These rooms are usually located in basement spaces which would not be utilized for other purposes. Community groups such as Boy Scouts, Girl Scouts, Four-H Clubs, and Commercial Clubs use them for their meeting places. They have a kitchen attached and are used for lunch and playrooms at noon. In some instances these rooms are used for band practice rooms. Although the ceilings of these rooms are low, they are usually covered with a sound-absorbing material so that the acoustics are excellent.

Many of the libraries built during this period are planned so that they are directly connected to the study hall and ample enough to accommodate a large percentage of the study-hall groups. Several of these rooms are artistically finished; one architect used knotty

<sup>4</sup>International Falls, Minnesota.

(Concluded on page 105)



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## New Gymnasium for Casa Grande Union High School

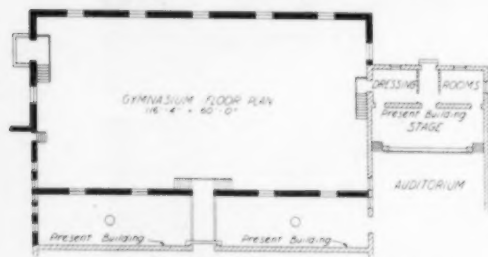
R. A. Holy<sup>1</sup>

Two educational considerations which are essentials of the local school program, led to the erection of the gymnasium unit of the Casa Grande Union High School. First, a good gymnasium is essential for a well-rounded program of physical education in any secondary-school curriculum. The extracurricular activities which have bodybuilding as an immediate objective require a gymnasium room and its showers and dressing rooms. Second, the growing tendency to make wider use of school plants for community activities and the increasing scope of adult education inevitably includes forms of physical training and activity for which a gymnasium is a natural center.



Interior of the gymnasium of the Casa Grande Union High School.

The Casa Grande Gymnasium was planned in the late winter of 1936 and erected during the summer vacation of that year. The building was officially dedicated on January 8, 1937, and opened for use at that time. The construction has been a



Floor Plan, Gymnasium Building, Casa Grande Union High School, Casa Grande, Arizona.

WPA project and involved considerable co-operative help on the part of the school authorities and of the students. The building is constructed of adobe brick made from the earth taken from the excavation for the building. In Arizona the Indians have made use of adobe from time immemorial. It lends itself especially well

<sup>1</sup>Superintendent of Schools, Casa Grande, Arizona.



The gymnasium building of the Casa Grande Union High School, Casa Grande, Arizona.

to a simple building like the present because of its economy, ease in handling, and permanence. Adobe does not deteriorate except through rapid changes in temperature and heavy rainfall. The wearing away and crumbling of an adobe wall can be prevented indefinitely by a heavy application of cement plaster such as has been given the inside and outside of the gymnasium walls.

The gymnasium measures 116 by 61 feet. The footings are heavy concrete and the subfloor is a concrete slab. To provide ample resiliency, the hard maple top floor is placed on diagonally laid pine boards



General view of the Casa Grande Union High School showing the auditorium at the left.

resting on the concrete. The entire floor has been carefully finished with four coats of a special sealer and varnish.

For evening use the room is lighted with fourteen lighting fixtures, of which twelve are equipped with one-thousand watt lamps and two with fifteen-hundred watt lamps. The latter are placed above the baskets.

The building has been financed by direct taxation and by a 30 per cent grant of the WPA. The latter funds could be used only for unskilled labor. The school has also received a grant of \$3,000 from the state to be utilized in defraying the cost of the building and installing a heating plant.

The shop classes of the high school made a large contribution toward the completion and equipment of the building. The boys have built removable bleachers, the only cost of which has been the materials.

The building is an integral part of the steadily growing educational program of community activities. It serves not only the physical-education classes but also brings into the high school the patrons who are interested in basketball and other indoor sports. The Boy Scouts make use of it, and it will be open to responsible adult groups who may desire to use it. The board of education is convinced that educational and recreational forms of physical activity and play are essential to a well-rounded life and that this building should serve to achieve these objectives.

### SCHOOL BUILDING NEWS

♦ The board of education of Evansville, Ind., has voted an issue of school bonds in the sum of \$250,000 for the construction of the North Side Vocational High School. Preliminary plans have been accepted, and Dr. N. L. Engelhardt, of Teachers College, has been engaged as educational consultant on the plans of the building.

♦ Mondovi, Wis. Bids have been received for the construction of a high school, to cost \$141,250. Plans for the building have been prepared by Architects Law, Law & Potter, Madison.

♦ McPherson, Kans. Bids have been received for the construction of a high school, to cost \$330,000. Of the total cost, the city voted \$192,000, and the Federal Government gave a PWA grant of \$138,000.

♦ Stillwater, Minn. Bids have been received for the construction of a junior high school, to cost \$205,110.

♦ Anaheim, Calif. The board of school trustees has approved plans for the construction of two school buildings, to cost \$270,000. The Fremont main building will be erected at a cost of \$195,000.

♦ San Rafael, Calif. Plans have been started for a \$105,000 school-building program. A school-bond election will be held.

♦ Wyoming, N. Y. The school board has let the contract for the construction of a new centralized school, to cost \$206,000.

♦ The Court of Appeals of Kentucky has approved the plan of the Scott County board of education for raising \$100,000 to improve the school buildings at Stamping Ground, Oxford, and Sadieville.

♦ Nantucket, Mass. The school board is completing plans for the erection of a new high-school building, to cost approximately \$130,000.

♦ Rochester, Minn. The voters of the city recently approved a bond issue of \$50,000 for an addition to the Hawthorne School. The proposal calling for \$800,000 for high-school purposes was defeated at the election.

♦ Wichita, Kans. The voters have approved a school-bond issue of \$688,314 for financing a school-building program. The program calls for two new school buildings, seven additions to present structures, and a building site.





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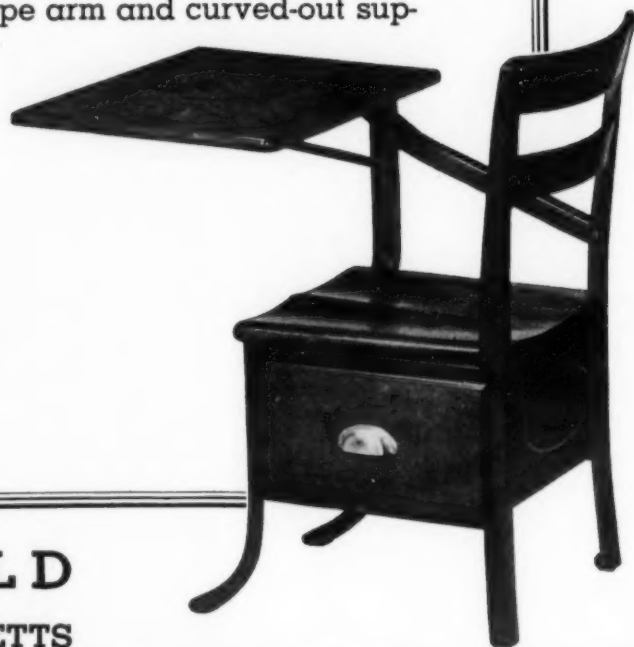


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### BOARDS OF EDUCATION

♦ Fond du Lac, Wis. Membership of the board of directors of the Fond du Lac County school-board association has been increased from six to nine, following the annual meeting of the association. The three new directors are Mrs. H. H. Hull, Brandon; Louis Kohlman, Forest; and R. P. Killam, Alto.

♦ Pottsville, Pa. The board of education has taken steps for the immediate collection of all delinquent tuition for pupils attending the local public schools from nearby communities. Thirty days' grace will be given for the payment of claims before the board proceeds to take action for the collection of tuition money.

♦ Covington, Ky. The board of education has taken steps toward the purchase of the old post-office building for use as school administration headquarters.

♦ Minneapolis, Minn. The school board has approved a three-week school closing during the midyear to meet a shortage in salary funds. With the longer vacation, schools will be in session 37 weeks this year, one week longer than last year. The schools will not be available to outside organizations for use at any time during the three-week period, unless a high rental fee is paid.

♦ North Mankato, Minn. The board of education has taken steps to purchase additional property adjoining the school playgrounds. It is planned to use the ground for playground purposes until such a time as part of it may be required for an expansion of the school plant.

♦ Chicago, Ill. The board of education has lengthened the annual school term by two weeks and has voted \$4,000,000 in salary increases to teachers, beginning with January 1, 1938. The increase of \$4,000,000 restores one third of the 15 per cent monthly salary cut taken from school employees under the board's economy program of 1932. It also includes the additional

pay which will be received because the schools will be open two weeks longer in 1938.

The change in salary rates is possible because of the improved condition of the board's finances. It will be done without increased taxes and without danger of payless paydays.

♦ Monroe, Mich. A new floodlighting system was installed on the high-school athletic field a year ago, at a cost of \$4,200. At the time, the board agreed to install the lights, provided the students' association paid the cost. An initial payment of \$250 was made on the lights a year ago, and recently a second payment of \$1,500 was made to the board.

♦ The board of education of Grand Rapids, Mich., has voted the employment of a firm of record stenographers to report all of its deliberations, at a cost of \$5 per meeting.

♦ The school board of Erie, Pa., has passed a resolution, favoring the employment of union labor for its maintenance department. This action was in direct opposition to an opinion rendered by the city solicitor, which held that the board had no authority to enter into written or verbal agreements in favor of any person or organization.

♦ Quincy, Mass. The school board received a request from the school custodians, asking for the adoption of a cumulative sick-leave plan for custodians, janitors, and cleaners.

♦ North Providence, R. I. The school board has voted to take over the paying of bus and carfares for town pupils who attend outside high schools. Supt. J. L. McGuire has estimated that the cost of transportation will exceed \$10,000 a year.

♦ Clinton, Mass. The school board has voted to grant the use of the high-school building one night each week for university extension classes. Students are allowed to pay for each course separately, or they will be allowed a price concession for registration in advance for the entire course of 24 lessons.

♦ Allegan, Mich. The school board has voted

to radically change the system of electing persons to the board. During the next two or more years, a ballot system will be used in an election to be held at the time of the annual school meeting. Candidates wishing to run for office, or persons wishing to enter a candidate, must furnish a petition with fifty names before the candidates can be placed on the ballot.

♦ Rochester, Minn. The city council has approved a school budget of \$305,408 for the school year 1938. The budget is an increase of \$40,000 over the estimate for 1937. It provides \$265,649 for instruction costs, including salaries of teachers, totaling \$244,849, as compared to \$226,355 for last year.

### THE AURORA SCHOOL REPORT

What appears to be a conventional school report, with its statistical and administrative facts, contains some timely observations and conclusions. While the work of the board of education, the superintendent, teaching and nonteaching personnel is described, such paragraphs as the following are found:

"Parents are all too prone to take an undue pride in their child's report card if the grades are excellent and, if they are not so good, the tendency is to berate the child or in some cases the teacher. In theory a child who does his best with his capabilities should not be condemned. Yet in the world rewards come for results, and not alone for effort and good intentions."

"A wide background of experience—children must go places and see things. If children have not had this opportunity at home, the school must provide it."

"The sense of left to right progressions—the habit of always looking from left to right across a picture strip or line of print—the habit of always looking at the left of a word first and scanning the word from left to right. This ability is of untold value in preventing reversals or the tendency to look at words backwards."



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### School Building News

♦ Auburn, Nebr. Construction work has been started on a new senior high school, to cost \$133,000. In addition to classrooms, the building will contain an auditorium-gymnasium, a shop, a music room, and a health suite. Provision will be made for sound amplification, an intertelephone system, and radio broadcasting system.

♦ Millburn, N. J. Plans are being completed for a new school-building program, to involve an expenditure of \$265,000.

♦ Biloxi, Miss. An election has been called to vote on a bond issue of \$100,000 for the construction of three schools.

♦ Washington, Iowa. The school board has called a bond election to vote funds for the construction of a new grade school, to cost approximately \$100,000.

♦ Joliet, Ill. Bids have been received for the construction of a two-story grade school and auditorium, to cost \$181,000. J. E. Coyle, Joliet, is the architect.

♦ Arlington Heights, Ill. Bids have been received for the construction of a new school, to cost \$123,000.

♦ San Francisco, Calif. Plans are going forward for the construction of the first unit of the junior college near Balboa Park, to cost approximately \$1,000,000.

♦ Worley, Idaho. Plans are being completed for the construction of a new school, to cost \$101,000. The building will be a PWA project.

♦ The schools of Lee County, Virginia, have begun a school-improvement program, involving a cost of \$200,000. Under the program, improvements will be made to schools which have been needed for several years.

♦ Elgin, Ill. Bids have been received for the school-building program, to involve a cost of \$500,000. The program will provide a gymnasium and academic wing, and a vocational unit for the high-school building.

♦ West Point, Miss. Considerable improvement has been effected in the school plant during the year. Under the improvement program, some needed alterations were made in the senior high school, the high-school library was increased in physical equipment, and considerable new teaching material and equipment was added in the various section rooms of the elementary grades and the junior and senior high schools.

♦ Iowa City, Iowa. The voters have approved a school-bond issue of \$398,750 for the construction of a high-school building.

♦ Paris, Tex. The voters have approved a bond issue of \$200,000 for the construction of a junior-college building.

♦ Hutchinson, Kans. The voters have approved a bond issue of \$369,500, the proceeds to be used for the construction of a junior college and several grade schools.

♦ Ogdensburg, N. Y. The board of education is completing the erection of an elementary and trade school. The building will be completed at a cost of \$800,000.

♦ Fort Bragg, Calif. The contract has been let for the construction of a high school, to cost \$170,499.

♦ DeLand, Fla. The voters have approved a school-bond issue of \$130,000, the proceeds to be used for the construction of an addition to the high school and for other necessary building improvements.

♦ Barstow, Calif. Construction work has been started on the administration and classroom building and shop building for the Barstow Union High School. The buildings will be completed at a cost of \$123,000.

♦ Wauseon, Ohio. Bids have been received for the construction of a grade school, to cost \$113,000.

♦ Detroit, Mich. The board of education has submitted a report to the city government, calling for an appropriation of \$12,500,000 to be spent for new schools and additions during a five-year period.

♦ Winona, Minn. The school board has received bids for the construction of the west-end

elementary and junior high school, to cost \$384,959.

♦ Pratt, Kans. Construction work has been started on the new junior-college and senior-high-school building, to cost \$257,000. Glenn H. Thomas, Wichita, is the architect.

♦ Fulton, Mo. Bids have been received for the construction of a high school, to cost \$140,000.

♦ Tulsa, Okla. The five-mill levy for the construction of the Will Rogers High School has been reduced to two mills, by order of the Oklahoma Court of Tax Review. The higher tax levy will not be necessary since a PWA grant has been obtained. The two-mill levy will bring in about \$200,000 for the building.

♦ Harlowton, Mont. Contracts have been let for the construction of a high school with auditorium-gymnasium. The building will be financed with a PWA grant of \$45,000 and a bond issue of \$55,000.

♦ At a meeting marked by interruptions and by the voluntary withdrawal of President Michael Tangney from the chair, about 400 members of the Association of Custodial Workers from New York's public-school system, voted to affiliate with the CIO as a local within the state, county, and municipal workers of America. The CIO has established a rival organization which claims 2,000 members among cleaners, firemen, and other custodial workers of city school systems. Mr. James E. Finegan, chairman of the municipal civil-service commission, said that plans are being made so that custodial workers may achieve civil-service status.

♦ Bayport, Minn. Construction work has been started on the addition to the Junior high school, which is to cost \$93,500. The building is a PWA project and will be financed with a government grant of \$42,075 and a school-bond issue of \$50,000.

♦ Arlington Heights, Ill. Plans have been completed for the new elementary school, to be erected at a cost of \$123,000. Of the total cost, the local district will contribute \$68,000 and the balance of the cost will be paid by the Federal Government in the form of a direct gift.

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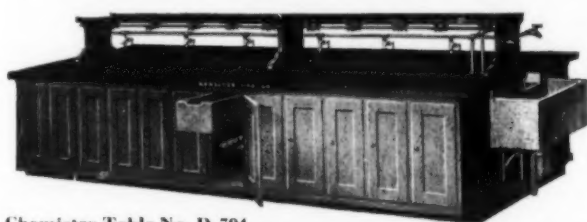
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Representatives in Principal Cities

♦ La Crosse, Wis. The school board has received estimates on two school additions, one new building, and equipment for the buildings, to cost a total of \$312,120.

♦ Rayne, La. The contract has been let for the construction of a new high school, to cost \$110,000. The building will be a PWA project.

♦ Rhinelander, Wis. The school board is preparing plans for a school-building program to cost approximately \$150,000. The program calls for two new school buildings, an addition to the West Side School, and a new Central School.

♦ Cedar Rapids, Iowa. Bids have been received for the construction of five buildings, to be included in the new PWA construction program to cost \$445,680.

♦ Hutchinson, Minn. Bids have been received for the construction of a new school in Dist. No. 2, to cost \$360,000.

♦ Moscow, Idaho. Construction work has been started on the new high school, to cost \$314,000.

♦ Porterville, Calif. Construction work has been started on the Bartlett elementary school, to cost \$148,000.

♦ Los Angeles, Calif. The school board has approved plans for the reconstruction of the Kern Avenue elementary school, to cost \$250,000.

♦ York, Pa. A three-story junior-senior high-school building was dedicated on November 9, with a program of dedication. The building, a PWA project, provides housing for a junior-senior high school, comprising 750 students and a staff of teachers. It was completed at a cost of \$88,642, of which \$39,825 was a PWA grant, and \$48,817 was furnished by the school district of York. Mr. E. G. Schaumburg was the architect of the building.

♦ Stoneham, Mass. The board of education has begun the construction of two elementary schools, containing six and eight classrooms respectively. The buildings will be PWA projects.

♦ Pasadena, Tex. Bids have been received for the construction of an auditorium-gymnasium and a junior-high-school building, to cost \$120,000.

♦ Milwaukee, Wis. A three-story addition will

be constructed for the John Dewey Junior High School.

♦ Los Angeles, Calif. The board of education has approved architects' drawings of five new school buildings, to be constructed as part of the \$2,500,000 pay-as-you-go school-building program. The largest project is the construction of the Manual Arts High School addition, to cost \$136,000; an assembly room will be erected at the Torrence High School, at a cost of \$100,700.

♦ Newton, Kans. The board of education has selected sites for new school buildings, to be included in the new school-building program, to involve an expenditure of \$400,000. Construction work on the buildings will be started immediately.

♦ Atchison, Kans. The contract has been let for the construction of the new elementary school, to cost \$143,000. In addition, the Lincoln School will be enlarged, at a cost of \$36,568.

♦ Kirkwood, Mo. Contracts have been let for new junior-high and grade-school structures, to cost \$460,000.

♦ Waupaca, Wis. Bids have been received for the construction of a new school to cost \$100,000.

♦ Pasadena, Tex. A contract has been let for the construction of the auditorium-gymnasium building and eight-room junior-high-school classroom building, to cost \$109,656.

♦ Wichita, Kans. The voters have approved a school-bond issue of \$688,314 for school-construction purposes. Of the issue, \$333,750 will be allotted for the construction of an intermediate school.

♦ Milford, Conn. The board of education has asked the city government for an appropriation of \$250,000 for the purchase of a site and the construction of a junior high school.

♦ Quincy, Mass. The school board has voted to change the name of the Adams Shore School to the Nathaniel S. Hunting School, in honor of the late Dr. Hunting who served for 34 years on the school board.

♦ Waterloo, Ill. Construction work has been

started on the new high and grade school, to cost \$124,390. The building is a PWA project.

♦ Marysville, Kans. The contract has been let for the construction of the PWA high school, to cost \$175,289.

♦ Porterville, Calif. Construction work has been started on the Bartlett Junior High School, to cost \$150,000.

♦ Manhattan Beach, Calif. The voters have approved a school-bond issue of \$50,000 for the construction of two elementary classroom units.

♦ Rockville, Md. The Montgomery County board of education has awarded a contract for the construction of the Kensington Junior High School, to cost \$130,000.

♦ New York, N. Y. The building and sites committee of the board of education has asked for an appropriation of \$16,505,000 for the construction of seven high-school buildings and seven additional sites for schools.

♦ Rome, N. Y. The board of education has begun a survey of population trends and school-building needs as a preliminary to the construction of new schools.

♦ Plain City, Ohio. The school board has completed the construction of a new school costing \$160,000.

♦ Anna, Ohio. The contract has been let for the construction of a new school, to cost \$108,700.

♦ Chicago, Ill. The board of education has taken steps to complete the Verdi High School, on which construction work was stopped in 1931. The building will be completed at a cost of \$1,875,000.

♦ Ridgefield, Conn. The board of education has voted to correct the electric lighting conditions in the East Ridge School. An appropriation of \$625 has been made to cover the cost of the work. In undertaking the work the board will make use of the suggestions of a foot-candle survey made by a committee of engineers of the Litchfield Light and Power Company.

♦ Joliet, Ill. Bids have been received for the construction of the Moran School, to cost \$181,000.

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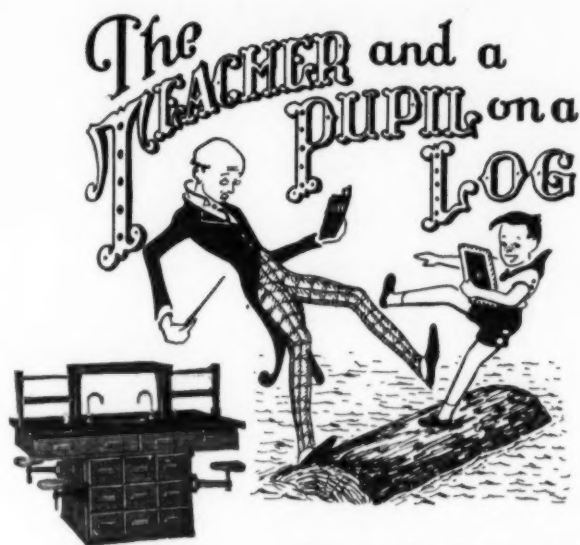


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### *School Finance and Taxation*

♦ Pittsburgh, Pa. The 1938 budget calls for a total of \$15,180,804, which is an increase of \$98,639 over the 1937 appropriations. The board maintains that a tax cut is impossible without a number of drastic service eliminations, and all efforts will be centered on keeping the levy at its present level. Supt. B. G. Graham, in a statement presented to the board, showed that increases totaling \$110,538 are obligatory on the board due to legislative acts alone. These include the teachers' tenure law, the 44-hour week for employees, and the requirement that school districts conduct an illiteracy test once every two years.

♦ Pittsburgh, Pa. Despite the pressure for lower school taxes exerted by real estate owners and the taxpayers' league, the expectation is that there will be no reduction in the tax for the year 1938. The principal factor in the school-tax situation is the fact that there is an anticipated shortage of \$1,500,000 this year. This will be reduced eventually to \$500,000, due to savings of \$1,000,000 effected in the general account.

♦ Grand Rapids, Mich. The board of education has adopted a budget of \$2,590,310 for the school year 1938. The budget, as adopted, provides \$97,052 for buildings and grounds, \$29,154 for equipment repair and replacement, \$20,150 for departmental outlays, and \$11,975 for shop operating expenses. The total for maintenance purposes is \$151,421.

♦ Madison, Wis. The 1938 budget of the board of education calls for \$1,313,370, as compared with \$1,276,889 for the year 1937. Of the total, the city will provide \$1,008,857 by taxation, as compared with \$1,016,485 in 1937. The remainder of the school fund will be made up through other revenues such as tuition, state aid, county aid, and other sources.

♦ St. Louis, Mo. The League of Women Voters has suggested that the board of education appoint an independent fact-finding bureau to undertake a survey of the administrative cost and setup of the board. The survey would include a study of salary schedules in the building department and would involve no additional expense if limited to administrative organization.

♦ Pittsburgh, Pa. The board of education has joined with the Philadelphia school board in opposing a court decision, restricting the levy of school taxes in the two cities to eight and one half mills. It is pointed out that, if the State Supreme Court upholds the ruling of a Philadelphia court, it will mean the loss of more than \$2,600,000 in revenue to the Pittsburgh schools next year. A reduction of two and three quarters mills would have to be made in the Pittsburgh school levy in order to bring the millage down to the level required by the Philadelphia court. Mr. N. R. Criss, attorney for the Pittsburgh board, has presented a petition, seeking to have the court ruling reversed.

♦ Primary-school aid in Michigan this year will amount to \$11.39 per child, according to Dr. Eugene B. Elliott, State Superintendent of Public Instruction. The total fund now being distributed is \$15,931,352, or \$931,352 more than the legislature had considered when the appropriations were allocated. The share of Wayne County alone, will amount to \$1,973,610.

♦ An investigation of the possibilities of an oil and coal severance tax for school purposes was suggested by A. D. McLarty, secretary of the Illinois School-Board Association, at the annual meeting of the association in Springfield. Mr. McLarty pointed out that some new source of revenue must be found for financing the school system. He argued for an increase in the common school distributive fund, a new method of financing high schools, and the reorganization and simplification of school districts to fit pupil population needs.

♦ Rockford, Ill. The voters defeated a pro-

posal to increase the school tax 49 cents. The school board will be faced with the need for a reduced budget to avert a financial crisis due to the defeat of the tax.

♦ Detroit, Mich. The board of education has approved a budget of \$30,671,310 for the next school year. This is an increase of \$1,194,303 over the estimate for 1937. Items covered by the increases include continuance of the salary program, additional teachers, and improvements to the school plant and equipment.

♦ Yonkers, N. Y. The board of education has adopted a budget of \$3,923,163. This is an increase of \$338,729 over the estimate for the year 1937. The school payroll item represents an increase of \$154,650 over the estimate for 1937.

♦ Philadelphia, Pa. The finance committee of the board has suggested a \$500,000 reduction in teachers' salaries and the elimination of evening schools and summer playgrounds as an economy measure to meet the 1938 school budget. To maintain the school system and salaries unimpaired, the finance committee originally had planned a budget of \$34,123,285, which it was estimated would allow for normal growth of the system. With these and other retrenchments it is estimated the board can come within \$5,500,000 of balancing its budget from current revenue.

♦ Portage, Wis. The total school budget for the year 1938 amounts to \$93,448.75, which is an increase of \$3,875 from the estimate of \$89,572 in 1937. Of the total, \$64,457 will be obtained from taxation, or an increase of \$2,448.

♦ Philadelphia, Pa. Following a supplemental opinion by the State Supreme Court on the school board's taxing power, action has been taken to float a \$6,500,000 loan under the regular borrowing authority. The supplemental opinion was given in the suit brought by Mayor Wilson against the board. It was contended that there was nothing in the original opinion adversely affecting the rights of the board to borrow money and issue bonds. The total tax levy, however, must not exceed the sum of 9¼ mills for all purposes.



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♦ Chicago, Ill. Despite the new pay raises for teachers and other school employees, school officials have anticipated that the 1938 school-tax levy will reflect a saving of \$816,025 under the 1937 levy. The 1937 levy was \$62,908,757. The reduction is due to the lowering of the total assessed valuation fixed by the county assessor.

♦ Jacksonville, Fla. At the regular November election in six school districts of Duval County, the voters approved the district millage for general school purposes for the next two years. The

millage was raised from 5 mills to 7¼ mills in the six districts. In the two remaining districts an election will be held next year.

♦ Gary, Ind. The school board has approved the general plan adopted by the general insurance board, which calls for a continuation of the present system of allowing one agency to direct the school insurance. The plan will result in extending the insurance agencies participating in school coverage to 19 or 20, who were not previously included.

that the school finances be equal, be it more or less.

Good budgeting is effected largely through reconstructing the past. Utility costs in school buildings are a puzzle to the ordinary school clerk, and it is doubtful whether any two clerks in the state charge these items in the same manner. It is readily apparent that the elementary-school costs of one county are not the same as those in another county.

The county unit law provides that the minimum term in West Virginia shall be nine months or such part as state and county funds provide. Under the law, and with limited funds, the length of term is dependent upon the latitude of the minimum school program and is affected by careful budget control of the county.

Under the school fund law, the state superintendent of schools is authorized to regulate the number of members on the supervisory staff, to fix the salaries of principals and county superintendents, and to approve the budgets for maintenance purposes. In accordance with these regulations, a state minimum school program has been set up for counties sharing in the equalization fund.

Since the last legislative enactment, certain representatives and interests from the wealthier counties have begun the process of securing more funds for wealthier counties, and this at the expense of the poorer counties. Although considerably more money was appropriated for the schools by the last legislature, the counties sharing in the secondary-aid funds have been informed that their state aid will be 1.2 per cent below the estimate of the previous year. A plea is made for equal educational opportunities and for adequate public finance for all schools.

In conclusion, it is believed that the present financial distribution laws are fair and good, and many times better than they were before the county-unit law was enacted. The schools of the state have been operated for a longer term on a reduced amount of funds.

## Secondary-School Finances in West Virginia

C. E. Albert, Elkins, West Virginia

The secondary-aided counties of West Virginia are in the majority. There are about 37 counties sharing in the state equalization fund. Since the inception of the county unit, and especially until the last legislative session, public-school educational opportunities for all children in the state are becoming equal. This is in accordance with the best theories of education in both the state and the nation. The wealthier and more densely populated counties have been compelled to assist the poorer, sparsely settled counties.

The last legislature began the process of unequalizing educational opportunities. They increased the amount of primary aid and lowered the secondary-aid or equalization fund, which left the poorer counties with their sparsely settled districts holding the bag, and running strictly under state regulations on a minimum program, with hardly enough funds to survive. The wealthier counties contended that in many of the poorer counties, due to the stipulations of the law, there are more teachers allocated than needed, which should afford equalization funds for these counties. In practice, it does not

work out that way, as the funds from increased numbers of teachers only applied to primary aid. The increase is, therefore, deducted from the secondary aid allotted to that county, according to the regulations.

Due to extremes of wealth and poverty of the various counties, the distribution of population, and the fact that these populations are compressed into a few urban districts, it has become absolutely necessary to obtain secondary aid in order to insure equality of educational opportunity throughout the state.

Experts who have studied school finance advocate supplying the finances from where they are and educating the children where they are. Children who receive their education in sparsely settled, poverty-stricken counties, and under stress and strain, get away to the industrial centers as soon as they can, and are required to live under the same laws as others. These persons are at a great disadvantage when they enter the larger centers, and they begin to rebel against the educational system. It is not contended that wealthier counties have less, but



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### THE LA SALLE HIGH-SCHOOL STADIUM, LA SALLE, ILLINOIS

The LaSalle-Peru Township High School, LaSalle, Ill., is the proud possessor of a stadium seating 3,800 persons and costing \$300,000. The structure, dedicated with a football game October 1, 1937, is a WPA project. At the dedicatory program, addresses were made by Senator William H. Dieterich of Illinois and Congressman N. M. Mason, of Joliet.

The stadium is located in a hollow in Central Park, Peru, adjacent to the high-school site. Advantage has been taken of a natural amphitheater for building the grandstand and the field house, and for laying out the playing field. The latter consists of two complete football fields, space for field sports, and a quarter-mile running track.

The construction was carried on as a Works Progress Administration project at a cost of approximately \$300,000, of which the high-school district as sponsor, furnished 15 per cent in skilled labor and materials. The entire field is surrounded by a high concrete wall. The night lighting is furnished by eight 60-ft. poles, carrying six lights each of 1,500-watt capacity.

The field house, which measures 30 by 106 ft., is located south of the gridiron and includes two team rooms, with showers and storage rooms for athletic material, etc. Above the field house, on the street level, is the main ticket office. A second ticket office is located at the other end of the stadium, also at the street level. A press box of aluminum construction and supported on two concrete piers, is located on top of the stadium. There



*The high school stadium, La Salle-Peru Township High School, Peru, Illinois. The concrete structure rests on a natural hillside. The high school building may be seen to the right in the background.*

is ample space for twelve news writers and radio broadcasters.

The land for the stadium was the gift of the Western Clock Company and is valued at \$62,000. A portion of the park not used for the stadium, has been deeded by the school board to the city of Peru for park purposes.

## An Experiment in Classroom Illumination

Lyla D. Flagler<sup>1</sup>

Eyestrain results from glare and insufficient and unevenly distributed light.

How to secure adequate illumination with no glare prompted a college class in hygiene to conduct an experiment in "school lighting." The college engineer assisted by a lighting engineer<sup>2</sup> made the changes in wiring and fixtures.

The problem was: (1) What kind of light fixtures will give adequate illumination without glare or shadows? (2) What wattage and what number of lights is sufficient for adequate illumination?

It is a comparatively simple matter to secure increased levels of illumination, by the installation of larger wattages in proper fixtures. It is more difficult to eliminate glare, because increasing the light in a room by the use of "direct" lighting fixtures may however, increase the glare and shadows which are irritating and fatiguing.

To measure glare, use a mirror or polished table top; the more sharply outlined the reflection of the illuminating unit on the table top, the greater will be the glare.

Light is measured by foot-candles. A foot-candle is the amount of light given by a candle of standard size at a distance of one foot. The light out of doors may be from 1,000 to 10,000 foot-candles on a bright day. The light in a classroom often varies from 4 foot-candles to 50 foot-candles. Ten to 20 foot-candles is considered by lighting engineers to be the standard requirement for classrooms;

10 foot-candles is held to be the minimum. Fine work, requiring intricate detail, engineers say, needs from 20 to 100 foot-candles of light.

Three types of light fixtures were used for this experiment: (1) direct, (2) semi-indirect, (3) indirect.

The results showed that the direct lighting fixture with a 150-watt bulb gave practically the same intensity of illumination as a 300-watt bulb used with the semi-indirect and the indirect fixtures. The glare from the direct was objectionable. The semi-indirect light

provided more illumination than the indirect, but there was more glare and the light was less evenly distributed. The indirect type provided less illumination but there was no glare.

The psychological reaction to the semi-indirect was the most satisfactory, as the indirect type gave a cold light which lacked "eye appeal." To offset the slight glare from the semi-indirect fixture, metal baffles were installed. (Baffles are metal saucers made for the purpose of reflecting light.) The baffles equalized the illumination to such an extent that the variation in the surrounding area was only .5 of a candle-foot.

To further improve the illumination, additional switches were installed on the lights near the windows so that only as many lights as are needed may be turned on. Each light has a switch and when only one light is needed no more need be turned on.

The walls and ceilings of the room where this study was made are a deep cream, which provided about a 70 per cent ceiling reflection.

	FOOT-CANDLES OF LIGHT		
	Directly Under Fixture	3 Ft. On Each Side of Fixture	6 Ft. On Each Side of Fixture
DIRECT TYPE OF FIXTURE 150 WATT BULB	10	0	4
SEMI-INDIRECT TYPE OF FIXTURE 300 WATT BULB	10	0	6
INDIRECT TYPE OF FIXTURE 300 WATT BULB	9	0	6
SEMI-INDIRECT TYPE OF FIXTURE PLUS METAL BAFFLES 300 WATT BULB	8	7.5	7.5



*The readings were made with the help of a small foot-candle meter.*

tion. If the ceilings are painted a flat white there will be a greater reflection, probably 85 per cent; this will increase the efficiency of the lighting plan.

A photo-electric eye would also be a great factor in maintaining equalized illumination. To summarize:

1. A test was made to determine a method of classroom lighting which would provide sufficient foot-candles of light evenly distributed, and without glare or shadow.

2. The foot-candles of light were measured by a sight meter.

3. Glare was determined by the use of highly polished table tops.

4. The direct type of fixture provided the

(Concluded on page 82)

<sup>1</sup>Instructor, State Teachers College, Eau Claire, Wis.

<sup>2</sup>Mr. R. E. Madigan, Northern States Power Co.



# What's A Feller Goin' ta' do?



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Lockers

● It's probably safe to assume that your lockers won't be subjected to a can opener or blow torch test. But the best protection against adolescent ingenuity is locker construction that can really "take it." That Lyon Steel Lockers have exceptional school-proof stamina is evidenced by the fact that scores of Lyon installations made twenty-five years ago show few effects of generations of school boy use.

Their strong frames, electrically welded into rigid one-piece units, cannot weaken. Their reinforced doors... that close gently against silencers... are secured with a three-point locking device that is practically everlasting. Investigate Lyon Lockers on your next requirement. They assure permanent usefulness with a minimum of upkeep... are made in types, styles and sizes to meet any school requirement. LYON METAL PRODUCTS, INCORPORATED, 1501 River Street, Aurora, Illinois.

**LYON** *Service*  
SCHOOL EQUIPMENT

LYON METAL PRODUCTS, INCORPORATED, Aurora, Illinois

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1501 River Street, Aurora, Illinois

Without obligation send information on:

☐ Single Tier Lockers ☐ Two-Person Lockers ☐ Gym Lockers  
☐ Box Lockers ☐ Locker Room Planning Service

Name

Address

City  State

# PEABODY

## CLASSROOM CHAIRS AND TABLES

### Write for New Catalog



No. 230AA

Peabody class room chairs and tables are sturdy, light weight, and built to last under hard service for many years. Construction is of steel and wood. See Catalog No. 38 for full details.

The new Peabody Catalog No. 38 is now ready to unfold to you complete details and illustrations of the big Peabody line of school furniture, auditorium seating and folding chairs. It is your guide to the finest quality seating money can buy.

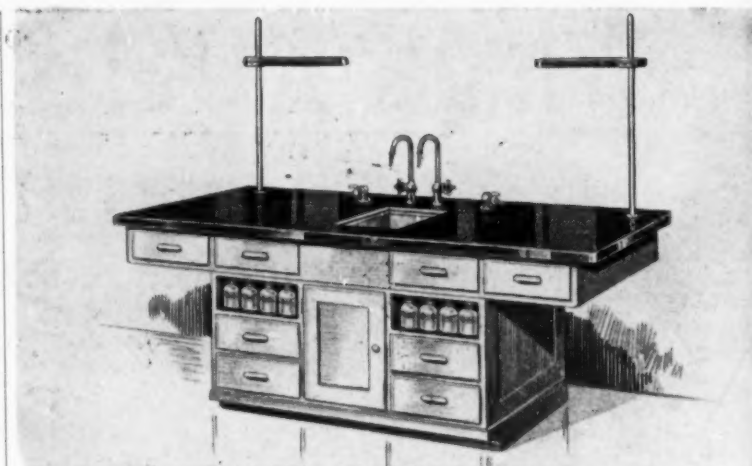
In this new catalog you will find various illustrations and full details about the big complete line of Peabody Class Room Chairs and Tables, also full details about the famous Peabody, Wabash and Panama Combination Desks. The Peabody Guarantee, Engineering Service and pictures of installations are also features you'll want to see and know.

Write today for our New Catalog No. 38

**PEABODY SEATING CO.**  
North Manchester - - - Indiana



Table No. 250 with Two-Compartment Bookrack



## MAXIMUM FLEXIBILITY

Combination Science Tables are carried in 12 stock models to accommodate up to 8 students. All parts are uniformly interchangeable, so that you may order exactly the auxiliary equipment you want in any unit. Sinks, water, gas, or steam outlets, electric receptacle, bottle racks, soapstone working surfaces, drawer trays, cupboards, uprights and cross bars—these are just a few of the optional features that can be specified on standard units. Let our experienced Planning Department help you.

WRITE TODAY.

**Hamilton-Invincible, Inc.,**

**Two Rivers, Wis.**

**HAMILTON-INVINCIBLE**  
LABORATORY VOCATIONAL AND LIBRARY FURNITURE

(Concluded from page 80)

most foot-candles with the least wattage; the semi-indirect type ranked second in this respect. The indirect type gave the least illumination per wattage.

5. The glare from the direct type was irritating and fatiguing. There was a slight glare from the semi-indirect type. There was practically no glare from the indirect type.

6. The psychological effect of the semi-indirect type of fixture was most pleasing. The addition of metal baffles eliminated practically all of the glare, and provided an even distribution of illumination equal to that of the indirect type.

7. Switches were installed so that each light had a switch, and there would be no waste of current.

8. The illumination from the lights near the blackboards was less than in other parts of the room, showing that the blackboards absorb light.

9. A recommendation has been made that the ceiling be repainted a flat white so that reflection will be increased.

10. A photo-electric eye should be installed if the room is to be an example of efficient school illumination.

11. As a result of this study the indirect type of lighting fixture, with the addition of metal baffles was judged most satisfactory. By using 300-watt bulbs in each unit an evenly diffused 12 foot-candles illumination, without glare and shadows, has been secured for the classroom. This is the illumination at night. During the day the illumination without artificial light varied from 4 foot-candles to 31 foot-candles. When all lights were turned on (in daytime) there was no corner in the room where the illumination was less than

12 foot-candles. The average illumination was from 20 foot-candles to 30 foot-candles.

### SAFETY IN PUPIL TRANSPORTATION

"Three million boys and girls are transported to and from school daily in conveyances provided by school authorities. Morning and evening a fleet of approximately 80,000 school busses moves out upon the highways of the nation, to cover routes totaling at least a million miles. There they take their chances with traffic hazards, inclement weather, and all other unfavorable road conditions. If this great program is to be carried out with safety, every precaution must be taken by those responsible for the enterprise."

This paragraph forms the introductory to a study made by the National Education Association and published in pamphlet form. The purpose of the publication is to promote safety practices. During the past year some horrible accidents have occurred in which a number of school children lost their lives.

There is an encouraging note that in a number of states thousands of children have been transported without incurring a single death, in others meeting only with minor accidents, and in still others without a single accident.

The selection of competent drivers is emphasized. The questions of age, physical fitness, vision, character, dependability, experience, and the like come into consideration. The matter of equipment, type of construction, brakes, tires, power, service and emergency doors, and other safety devices must be weighed if absolute safety is to be insured. Grade crossings have thus far proven the greatest menace. The research division of the National Education Association submits the following:

1. Keep to the right of center line of highway.
2. Pass overtaken vehicles on left, but only after sounding horn and only when road ahead is so clear as to permit getting back to right with a safe clearance and with a wide margin for safety.
3. Under no circumstances attempt to pass an

overtaken vehicle at an intersection, on a curve, or approaching the crown of a hill.

4. At intersections, be prepared to stop if vehicle on intersection road is moving onto intersection and do not try to take the right of way.

5. Keep far enough back of the vehicle ahead to allow a safe braking distance in the event that the other vehicle makes a sudden stop. Except in an emergency, do not stop so suddenly as to cause collision by the following vehicle.

6. Signal before making a turn, and further insure safety by looking to see whether a vehicle is approaching from the rear. Wait before pulling out from the curb until making such observation.

7. Always keep both hands on the steering wheel and eyes on the road ahead while driving. Look behind before backing.

8. Stop before crossing all railroads and after carefully looking in both directions and listening, proceed only if it is safe beyond any possible doubt, and then proceed in low gear, gears not being shifted until all tracks have been cleared.

9. When stopping on a highway, pull as far off the hard surface as road conditions permit and, where the stop is prolonged, see that the rear of the vehicle is adequately protected.

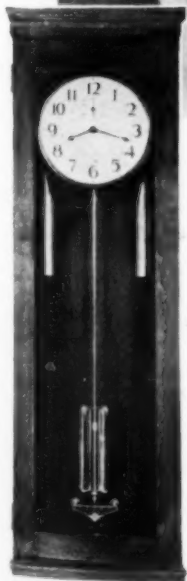
10. Do not operate at excessive speed at any time. At curves, blind crossings, crests of hills, in fog, or wherever the view is curtailed, reduce the speed so as to be able to stop within the distance of clear vision.

### Joliet High School Progresses

The Joliet, Illinois, Township high school found that its enrollment had increased by 1,600 while the property valuation of \$48,883,687 in 1929, had decreased to \$33,116,853 in 1936, thereby seriously embarrassing the financing of the schools. The board of education proceeded to campaign for an increase of 25 cents on the educational tax rate. A pamphlet giving a frank and complete statement of the situation was issued with the result that the proposition was carried by a handsome vote.



# Reduce the teaching load with INTERNATIONAL TIME and SOUND DISTRIBUTION SYSTEMS



In this year's new school housing and improvement programs, don't forget to include International Time and Sound Distribution Systems . . . equipment that serves in many ways to reduce teaching and administrative loads.

Remove the burden of schedule maintenance with an International Time and Program System . . . bells ring automatically and always in agreement with the clocks . . . giving instructors full time for strictly educational activities.

More work is accomplished in less time with an International Sound Distribution System . . . supervisory duties are accomplished in a fraction of the usual time and invaluable educational helps that are available "on the air" are brought in to assist in obtaining maximum teaching results.

[[ Make a memorandum now to see this equipment at the N.E.A. Convention . . . Atlantic City, February 26 to March 3 ]]



## INTERNATIONAL BUSINESS MACHINES CORPORATION

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**PIONEERS in HEALTH SAFETY**

In any new replacement program or in any new school building plan, Halsey Taylor Drinking Fountains receive primary consideration. These fountains pioneered a new era of freedom from contamination, because of many distinctive health-safe features! Write for latest catalog. The Halsey W. Taylor Co., Warren, Ohio.

**Halsey Taylor**  
DRINKING FOUNTAINS

### School Hygiene Notes

#### NEW ATHLETIC FIELD IN KENTON, OHIO

A new athletic field, constructed as a PWA project, has been dedicated and will be used for night football games in Kenton, Ohio. The field occupies a 14-acre site, including a site for a high-school building later on. In the construction, the Federal Government expended \$16,000 for the grading of the field and labor on the stadium, in addition to furnishing the iron structure for the stadium.

The new field represents a co-operative enterprise, in which various local organizations had a share. A businessman donated the goal posts; the American Legion Post gave a flagpole; a senior class contributed \$185 to build the stone entrance and gates to the field; the Future Farmers of America provided the colored stones; a women's organization contributed \$50 for the landscaping and shrubbery; the high-school student body collected money for the seeding and for the installation of lights; the student council provided the concession stand; and local businessmen raised \$1,500 for band uniforms and vestments for the choir.

Since the opening of the field the receipts have averaged about 600 per cent more for each home game this year than last, when the old plan of day football was in operation.

#### TOILET MAINTENANCE<sup>1</sup>

Some years ago, some ingenious but unimaginative traveling supervisor found the toilet seats in some of our older and more dilapidated schools dirty, cracked, and in general, insanitary. The ingenuity lay in recommending the complete removal of the offending items of equipment. The

lack of imagination lay in not picturing the result.

Actually a matron or student who can't be trusted to keep a toilet seat clean, by the same token may be expected to maintain the porcelain bowl in an equally insanitary state. So cleanliness was not served.

Cracked seats might have been replaced with a nominal outlay, and today's composition-bakelite seats (black) or heavily lacquered "church" seats (white) are far superior in wearing quality, at about the same cost, as the old seats which were rightly retired.

Persons who do away with seats just don't stop to follow through the result. Unprotected porcelain in weather below zero is no encouragement to effective elimination. Standing on the rim and squatting, while effective, is a return to the primitive which seems undesirable. All other alternatives adopted by children tend to discourage elimination and encourage constipation—which from the health standpoint appears highly undesirable.

Both types of seats mentioned above will be listed hereafter on the annual estimate. The open front model will be the only one approved. It is recommended that as promptly as possible, new seats be ordered and placed in use wherever seats have been removed. No more of the cast porcelain seat fixtures are to be purchased.

Another problem in the care of toilets is general cleanliness and control of odors. A smelly toilet is a dirty one. Urinals equipped with adequate flush valves and flooded daily with hot soap suds will not smell unless the traps are fouled or dirt is accumulating in some portion of the fixture.

High smelling "deodorants" have no place in sanitation. A toilet or bathroom that smells of Lysol or other disinfectant—or some chemical "ozonator"—is immediately open to suspicion

<sup>1</sup>These primary suggestions are found in the *Fortnightly Field Letter* of the Educational Division, U. S. Office of Indian Affairs, May 1, 1937.

as a filthy spot masking its true condition in a more powerful smell which is sometimes associated with "hygiene."

Old and insanitary fixtures may sometimes justify the use of a solution of chloride of lime as a sanitary measure, but any other of the usual disguises simply covers up filth, rather than cleans it out.

To repeat, any and all fixtures which are safe enough to continue using can be kept clean and clean smelling with daily scrubs with hot soap suds—combined with an effective brush wielded by a willing muscle. Let's get clean and stay clean and smell clean—and the only clean smell is the absence of odor.

#### HYGIENE AND SANITATION

♦ Independence, Mo. A full-time school nurse has been employed by the board of education. The salary will be paid entirely from school funds.

♦ Lee, Mass. A school health drive was conducted recently in the schools. Tubercular and diphtheria tests were given to first-grade and preschool pupils.

♦ Manhattan, Kans. Dental inspections were conducted for 1,583 school children. Of that number, 894 required dental service.

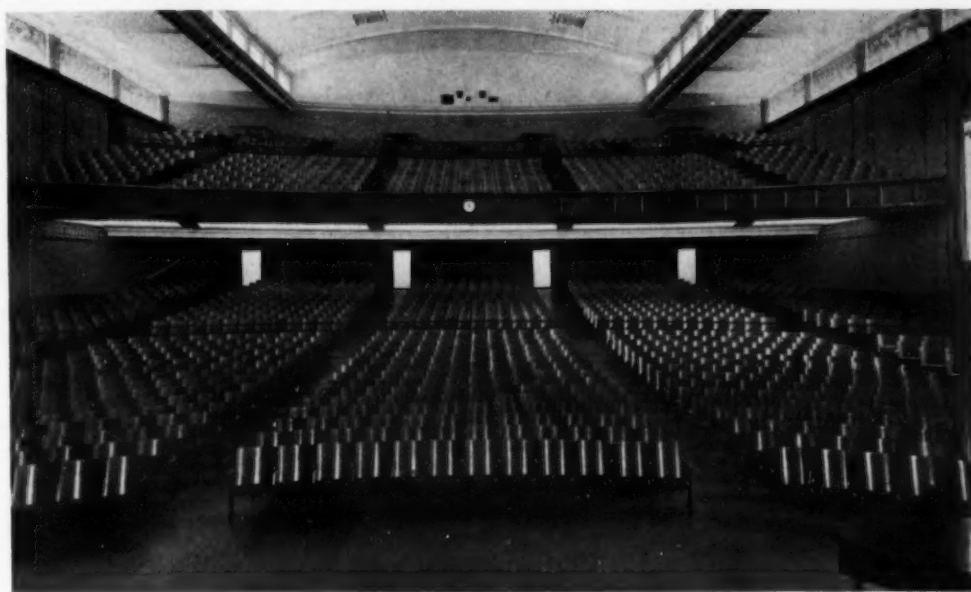
♦ Alton, Ill. A preschool immunization program has been conducted to safeguard children from diphtheria. Of 442 children who have entered the schools for the first time this year, 324, or 73 per cent, have been fully immunized.

♦ Fort Worth, Tex. The board of education has approved a partial reorganization of the department of physical education and health instruction. A woman assistant to direct girls' physical-education work will be employed. An assistant director of physical education has been employed to have charge of intramural and interschool athletics.

♦ The board of education of Fremont, Nebr., will provide its school safety patrol with white rubber capes and red caps. The capes are to be used during storms and blizzards.



## Keeping Step With Modern Education



Wyandotte High School, Kansas City, Kansas.  
Hamilton, Fellows & Nedved, Chicago, Ill., and Jos. W. Radotinsky, Kansas City, Kansas, Associate Architects.  
Fred P. Close and Son, Jobber

With a background of more than thirty years' experience in the manufacturing of quality school furniture; we are in a position to furnish promptly the particular type of modern school seating best suited to your requirements.

Be assured of correct seating for your school by consulting with our engineering department. Phone, wire, or write.

**Arlington Seating Company**

**Arlington Heights, Ill.**

### Teachers and Administration

#### THE TEACHERS' LOYALTY OATH

A study on the exaction of the loyalty pledge on the part of teachers in the United States has been made by the National Education Association. The following states and areas exact a pledge of loyalty:

Arizona	New York
California	North Dakota
Colorado	Oklahoma
District of Columbia	Oregon
Florida	Rhode Island
Georgia	South Carolina
Indiana	South Dakota
Massachusetts	Texas
Michigan	Virginia
Montana	Washington
Nevada	West Virginia
New Jersey	

In the states of Rhode Island, Florida, Texas, South Carolina, and Virginia there are no statutory laws demanding the pledge but school administrators are empowered to insert a clause in the teachers' contracts whereby a loyalty oath or pledge is exacted.

The laws prescribing oaths for teachers cannot be classified into clean-cut types. As applied to public-school teachers three essential differences, however, can be pointed out: (1) frequency of taking the oath; (2) detail of prescription; and (3) the phraseology of the pledges.

In discussing the frequency of taking the oath the report says:

#### Frequency of Taking the Oath

The oath-of-office type of pledge is taken presumably when the teacher is first employed

by a school system or a college. The six areas in this category are: District of Columbia, Georgia, Massachusetts, Nevada, New York, and Vermont.

Oaths associated with certification requirements must be signed every few years when certificates are issued or renewed. Twelve states of this type are: Arizona, California, Colorado, Florida, Indiana, New Jersey, North Dakota, Rhode Island, South Carolina, South Dakota, Texas, and Washington.

Where the law makes the oath a definite part of the contract the teacher presumably makes a pledge each year. Six states in this group are: Michigan, Montana, Oklahoma, Oregon, Virginia, and West Virginia.

The detail of prescription is stated in the following:

a) The simplest pledge required of teachers is one "to support" the United States Constitution and the constitution of the state. Four states of this type are: South Carolina, South Dakota, Vermont, and Virginia.

b) Pledges "to support" the constitution may be enlarged to include the promise "to discharge faithfully" the duties of a teacher. Five states in this group are: Massachusetts, Michigan, New Jersey, New York, and West Virginia.

#### Compulsion and Penalties

In nineteen states there do not exist any definitely prescribed penalties for failure to observe the law. The statutes or rules usually state or imply that it is "unlawful" for a teacher to have a certificate, or to begin his duties, or to sign a contract, but no penalty is stated in case the oath is omitted or violated. In these states, however, state and county authorities can refuse to grant the certificates and local officials can withhold the contracts from nonconformists.

Penalties are stated in the laws of five states. In Oklahoma, any teacher or school officer violating the law is guilty of a misdemeanor and may be fined from \$100 to \$500, or im-

prisoned for from 60 days to six months, or both. In West Virginia, the teacher entering upon his or her duties without first filing an oath may be fined from \$5 to \$20 for each month of the period of violation, and the secretary of the board may be fined from \$10 to \$20 for delivering any salary drafts. In Colorado, an administrative officer permitting a teacher to enter upon his duties without taking an oath may be fined not more than \$100 or imprisoned for not more than six months, or both. South Dakota revokes certificates permanently for refusal to take the oath or for its violation; and in South Carolina any teacher or any official who hires a teacher who has not complied with the requirement to pass an examination on the constitution and to demonstrate his loyalty thereto is liable for dismissal.

#### TEACHERS

♦ Augusta, Ga. The board of education has adopted a rule, requiring kindergarten teachers on the eligible list to have the same qualifications as now required for teachers in the elementary schools. The requirement for grade teachers is three years of college training and graduation from a standard high school.

♦ Revere, Mass. The school board has adopted a rule, which provides that the marriage of any civil service woman employee, appointed by the board on and after November 26, 1937, will be considered just cause for her dismissal.

♦ Leominster, Mass. The school board has adopted an amendment to the salary schedule, placing teachers with a degree from state teachers' colleges on the same status as graduates from the liberal-arts colleges. Under the amendment the maximum salary for women teachers with a college degree will be \$1,700 instead of \$1,600.

♦ Chattanooga, Tenn. Additional salary increases have been given to 150 teachers on the city schools staff. The raises will result in an increase of \$2,000 a month in the schools' payroll.

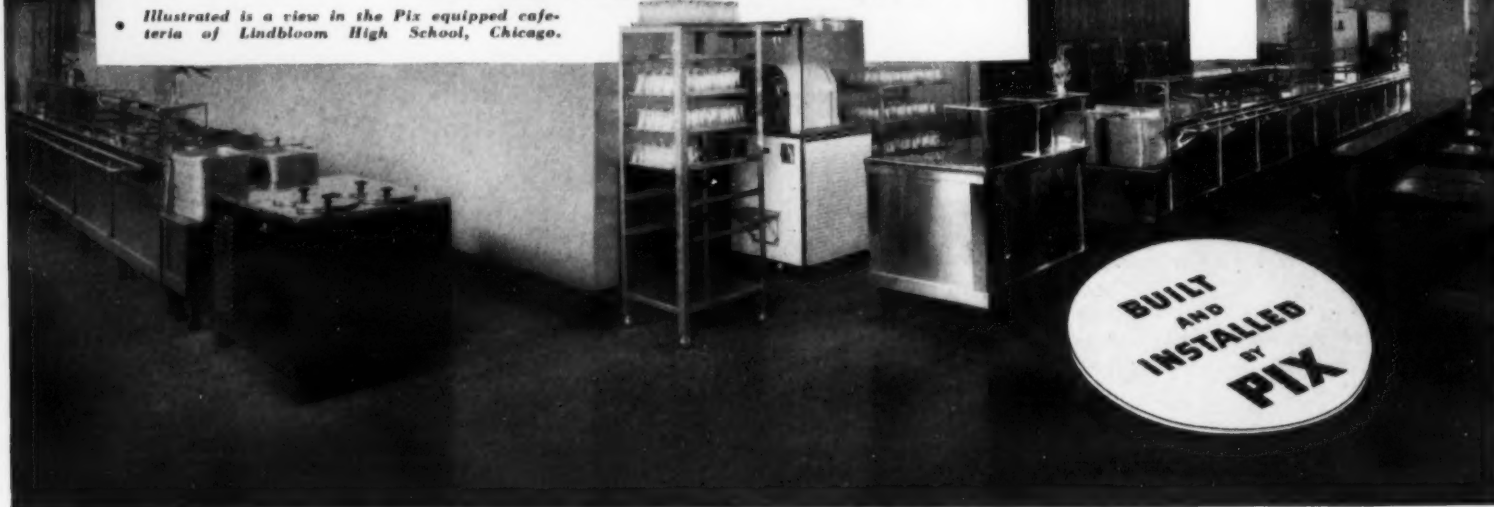
## AT THE HEAD OF THE CLASS IN CAFETERIA EQUIPMENT

Pix Equipment passes every examination with flying colors . . . whether it's in attractiveness of design, sturdiness of construction or economy of operation. It is planned and built by experienced technicians to give many years of efficient and uninterrupted service.

School executives and their architects are invited to make full use of our engineering and consultation staff—whether the problem is one of modernizing present food service facilities, planning a new installation or buying single pieces of cafeteria and kitchen equipment.

**ALBERT PICK CO., INC.**  
2159 PERSHING ROAD, CHICAGO

Illustrated is a view in the Pix equipped cafeteria of Lindbloom High School, Chicago.



### OHIO STUDY OF SCHOOL UNITS

The thought that educational effort may be promoted or retarded in accordance with administrative units employed has prompted the inauguration of careful studies on the subject. Funds for the prosecution of this study made available through the Emergency Relief Administration Act of 1935 were sufficient for only ten states; namely, Arizona, Arkansas, California, Illinois, Kentucky, North Carolina, Ohio, Oklahoma, Pennsylvania, and Tennessee.

The study for Ohio, prepared by T. C. Holy and John A. McKnight, under the direction of D. H. Sutton of the Ohio State Department of Education, and with the co-operation of the United States Office of Education, has been completed and published.

A good part of the printed report is devoted to a description of the general plan of the local school units in Ohio, the significant trends in the schools and school districts, and the financial considerations involved. The trend toward fewer and therefore larger school districts is shown in the fact that while in 1906 there were 2,629 school districts in Ohio, the number had been reduced to 1,729 in 1936.

The present study, however, concerns itself in a concrete way with data relating to Ashland County as a typical situation, and brings into bold relief the changes and betterments which are here possible. A summary of the recommendations is provided.

The publication of this study has since been followed by another devoted to Tuscarawas County. Here, too, the historical and educational background is provided, together with an array of physical and economic facts. A reorganization is proposed.

### RULES FOR APPLETON SCHOOL GYMNASIUMS

The board of education of Appleton, Wis., has adopted new rules to govern the use of public-school gymnasiums by nonschool groups. Under

the rules, no smoking is permitted in the school building at any time. No spectators will be allowed in the gymnasiums or in the buildings. No group is permitted to invite other groups to compete or practice with them.

Any group using the gymnasiums must use their own balls, suits, towels, etc. Tennis shoes must be worn on the gymnasium floors. No group may use the gymnasiums to exceed one period of 90 minutes per week. This enables more groups to participate each week. Each group leader must secure a physician's permit to show that every person participating in the use of the gymnasiums is free from athlete's foot.

All participants upon leaving the buildings must see that the doors are locked, the lights turned off, and windows shut.

A deposit fee of \$2 is required before the keys are issued. Each group must pay an advance fee of \$10 for the season to cover the cost of light expenses. Each group is required to reimburse the janitors for cleaning the floors after use of the gymnasiums.

### EXPERIMENT IN KINDERGARTEN INSTRUCTION IN MASON, MICHIGAN

Inadequate housing facilities provided the stimulus for an experiment in kindergarten education in the Mason, Mich., public schools. Faced with the need for additional grade space, the board of education purchased and remodeled a private dwelling for a model kindergarten building.

The downstairs bedroom and dining room became a sizeable classroom; the living room became a playroom; a den was made into a cloakroom and a back porch into a workshop. The kitchen and bath were not changed except that washbowls and sink were lowered. The backyard was fenced and playground equipment added to make a suitable play space. Special lights were installed and a thermostatically controlled gas unit was added to the furnace to keep a uniform temperature at all times.

With the opening day of school, the effects of the new housing facilities were obvious. The abrupt transition from home to school had been more successfully bridged. Formal instruction was not attempted and the children were allowed to become acquainted with their new home with its usual type of kitchen, stove, kitchen sink, bathroom fixtures, piano, rug, clock, etc. Older children were not allowed in the building.

Results of the experiment indicated a complete elimination of the homesick, frightened child, and also the one who must be brought to school by parents and coddled into coming to school each day. Mr. Edwin M. Boyne, superintendent of schools, directed the venture.

### SCHOOL AUDITORIUM RENTALS

Hillsdale, Michigan, enjoys a fine high-school auditorium and gymnasium. The board of education has formulated the following rental conditions for the use of the auditorium by responsible individuals or organizations:

For auditorium functions exacting an admission, fee of \$25; where admission is free, \$15; use of the gymnasium for dancing, \$50; for other functions than dancing, \$25; where admission is free, \$15.

The rule also says that for extra time either before or after the time for the activity, it shall be customary to allow one evening from 6 to 10 o'clock without extra charge. All extra time shall be paid for at the rate of fifty cents per hour for every hour that the building is kept open.

The rule also exacts \$5 for the use of the kitchen, and \$25 for the use of the cafeteria.

### WHAT SCHOOL PEOPLE ARE SAYING

"In the past there has been too much attention paid to rating in our schools. I don't want teachers to feel that every time a supervisor comes into the classroom that she is being rated. We wish them to feel that the supervisor is coming to help and not to criticize." — Dr. E. J. Cummins, President Board of Education, El Paso, Texas.





## TWO BIG REASONS WHY SCHOOLS

1. SAVE WATER
  2. REDUCE MAINTENANCE COSTS
- WITH WATROUS FLUSH VALVES

### AT THE NEW WYANDOTTE HIGH SCHOOL

The installation of Watrous Flush Valves at the new Wyandotte High School, at Kansas City, Kansas, is typical of hundreds of schools throughout the United States and foreign countries. The list below represents just a few of the Watrous Flush Valve installations in school service.

Junior High School,  
Santa Barbara, Calif.  
Corinth School,  
Albany, N. Y.  
Los Angeles Junior  
College  
Los Angeles, Calif.  
Junior and Senior  
High School,  
Stamford, New York  
Lake Placid School,  
Lake Placid, New York  
Mary E. Curley School,  
Boston, Mass.  
Senior High School,  
Providence, R. I.  
Northeast High School,  
Oklahoma City, Okla.  
George Mason School,  
Richmond, Va.  
Vernon School,  
Birmingham, Ala.  
Chelsea Heights School,  
St. Paul, Minn.  
U. of D. High School,  
Detroit, Mich.  
Hamtramck High School,  
Detroit, Mich.  
Nathan Hale Jr.  
High School,  
Milwaukee, Wis.  
Senior High School,  
Ambridge, Pa.  
Woodruff Senior  
High School,  
Peoria, Ill.

**T**HERE has been a remarkable swing to Watrous Flush Valves in the school field for two very sound reasons. First they eliminate needless waste of water and second, they reduce maintenance costs.

The simple screw driver adjustment and the self-cleaning by-pass, as shown by the accompanying views, are features that are especially important in school installations . . . so important, in fact, that school architects as well as the school operating personnel, in every section of the country, are calling for Watrous Flush Valves.

Before you make final decisions on the details of any modernization or new building program, we suggest that you write for complete information about Watrous Flush Valves. You won't incur the slightest obligation and, if desired, we can tell you where valves can be inspected in your locality.

IMPERIAL BRASS MFG. CO.

521 S. Racine Avenue, Chicago, Ill.



### SIMPLE SCREW DRIVER ADJUSTMENT

In both the piston and diaphragm types of Watrous flush valves it is a very simple matter to adjust the length of the flush so that the least amount of water will be used for the particular condition. Simply remove the nut, take a screw driver and turn the adjustment screw and the flushing time can be lengthened or shortened as desired without even shutting off the water or disturbing any connections.



### SELF- CLEANING BY-PASS

This cut-away view shows a Watrous diaphragm valve in flushing position with the arrows indicating the direction of flow. Note the little tapered pin in the by-pass orifice. This is the patented self-cleaning feature. Every time the valve is operated this pin cleans the orifice and there is no possibility of its being clogged with scale, sand or mud. Note



also the unusually large waterways that assure good flushing action even when the water pressure gets low.

# Watrous Flush Valves

THEY PAY FOR THEMSELVES IN THE WATER THEY SAVE

# GYMNASIA..

## Properly Planned Properly Equipped

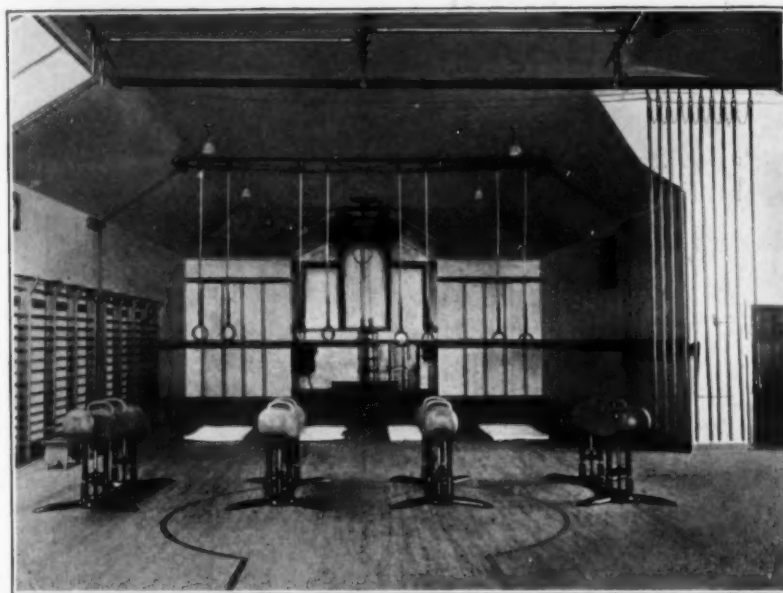
The Gymnasium, serving as the nucleus of the entire program of physical education and recreative sports, must be well planned to serve with the utmost efficiency and benefit to the entire student body.

Porter gymnasium engineers are experienced in the proper planning and equipping of school gymnasiums. They understand the aim of the program in physical education and can be of vital service in interpreting this knowledge in the light of efficiency of design and equipment.

Write for information regarding the Porter Engineering Service and Loudon Gymnasium Equipment.

## J. E. Porter Corporation OTTAWA, ILLINOIS

Successors to  
Gymnasium Equipment Division  
A. G. Spalding and Bros. Co.



GIRL'S GYMNASIUM, SUMNER HIGH SCHOOL, ST. LOUIS, MO.

**PORTER MADE PRODUCTS INCLUDE:  
LOUDEN**  
GYMNASIUM EQUIPMENT  
BASKETBALL BACKSTOPS  
PLAYGROUND EQUIPMENT  
SWIMMING POOL APPARATUS  
SEND FOR CATALOGS

## School Administration News

♦ Braintree, Mass. The school board has approved a program, calling for an enlargement of the present vocational-guidance course in the high school. The purpose is to assist every student to find himself before he is graduated and to assist in placing him in industry and commerce.

♦ Newton, Mass. A high-school course in safe automobile driving has been introduced. The course has been approved by the Newton safety council.

♦ Somerville, Mass. Miss Catherine Falvey, vice-chairman of the school board, recently introduced a resolution, asking that homework be given pupils only on Friday evening. She said that pupils are given homework for each subject which takes up four or five hours each evening. This, in addition to regular schoolwork, is too much.

♦ Boston, Mass. Instruction in advertising, salesmanship, and current events has been added to the work in the Opportunity School.

♦ Decatur, Ind. A department of visual aids has been added to the course in the high school. Classes in safety, science, history, English, and other subjects will be available to students.

♦ Wisconsin Rapids, Wis. The school board has voted to purchase a public-address system for the use of the Lincoln High School, the Witter building, and the field house.

♦ The rising curve of high-school enrollment in the nation, which has climbed upward since 1880, has now taken a downward turn. The registration which increased more than 140 per cent between 1910 and 1920, is expected to show an upward surge of slightly more than 40 per cent when new figures are compiled in 1940.

By 1938, it is estimated that the nation's high schools will reach an all-time high registration of 6,135,000 students. From then on, there will be a recession of figures.

♦ New York, N. Y. The board of education has considered a proposal to keep a photographic duplicate of every permanent record on file in the school-board headquarters. The duplicated records would be useful in case the originals were destroyed in a fire. If the plan is adopted, literally millions of documents would be photographed. About 2,500 separate documents can be photographed on a small roll of film. The photographs can also be stored in considerably less space, which is another advantage.

♦ Boston, Mass. The school board has approved a proposal that first-aid instruction be introduced as part of the high-school curriculum.

♦ Champaign, Ill. The school board has approved the establishment of a new adult class in home conducting. The course is sponsored by the parent-teacher council and will cost \$50.

♦ Fredericktown, Ohio. A new course in art instruction has been introduced in the elementary grades. The erection of a new building for vocational agriculture has made it possible to offer more thorough training.

♦ Aberdeen, Mo. Room libraries have been established under the direction of the teachers in one of the schools. Under the plan, when a grade finishes a certain reader, the teacher asks those who wish, to donate their books to the room library. By this plan, pupils in the next year's class may use the books in the classroom.

♦ Oshkosh, Wis. The board of education has voted to appropriate \$1,888 to defray the cost of installing sound equipment at three schools.

♦ Muskogee, Okla. The school board has installed sound equipment in two high schools for use in visual education. While the equipment is intended for science classes, it will also be available to large groups of students.

♦ The State of Louisiana has set an educational example for other states in the spending of \$550,000 for free library books for distribution among the public, private, and parochial schools of the state. Under the direction of the governor, 200,000 books are being distributed this year, at a

cost of \$250,000, and plans call for the purchase of \$300,000 more next year.

♦ West Point, Miss. Three new departments were added in the public schools at the opening of the fall term in September. These included diversified occupations for students pursuing regular scholastic subjects, a music course under a full-time instructor, and a course in physical education under a full-time instructor. Plans are being made for a guidance curriculum suitable for local needs.

♦ Virginia, Minn. The board of education is sponsoring a department of visual education and radio broadcasting. The program consists of activities within the school, conducted under the direction of the heads of departments, including supervisors, principals, and teachers. New films have been purchased which, together with rented films, enable the teachers to correlate their work with visual education. Mr. Nels Nelson is in charge of the radio program.

♦ Proctor, Minn. All children, from the fifth to the twelfth grades inclusive, are learning to swim as a part of the course in physical education. A new pool and gymnasium were recently completed, at a cost of \$127,000. The gymnasium is readily convertible into an auditorium, by a mobile seating arrangement, which by the pressing of an electric button, converts the gymnasium into an auditorium with 475 upholstered seats. A large-size stage and balcony, capable of seating 600 persons, is a feature of the building.

♦ Boston, Mass. A study of the quality and cost of food served in the intermediate and school lunchrooms has been ordered by the school board. The investigation was aimed directly at the schools served by the women's educational and industrial union.

♦ Chelsea, Mass. The school board has established classes in lip reading in the evening high school for persons hard of hearing.

♦ North Adams, Mass. The school board has voted to employ the services of a lip-reading teacher, beginning with the new school term.



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OF DOLLARS

Deskor Chair convertible units have been installed in a number of Boston's new and old schools. Every installation resulted in substantial money savings and capacity increases. Among these was Dorchester High School for Girls.

At the time when additional classroom and study station capacity was vitally needed in Dorchester High, the city of Boston did not construct the added floor space necessary to provide desks for eleven classrooms. Instead of doing this, Boston discarded outmoded assembly hall seating from two large rooms and installed Deskor Chair convertible units in them. These two rooms accommodate 897 pupils in assembly formation, and furthermore, provide study station facilities equalling in capacity eleven new classrooms.

Eleven classrooms at prices in effect when Deskor Chair convertible units were installed would have cost approximately \$200,000. Deskor installation at prices in effect that time cost \$13,455, and Dorchester High School for Girls was but one of a number of Boston installations, each of which saved substantial amounts of money by increasing capacity in old buildings with no additional construction, or decreased cost of construction in new buildings.

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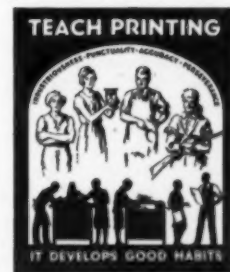


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## The Atlantic City Convention

For the 1938 convention in Atlantic City, February 26 to March 3, the program builders of the American Association of School Administrators have announced that the problems of youth will be discussed, that the most timely difficulties of city and rural-school administration will come under discussion, and that a social atmosphere will be promoted which is likely to stimulate the professional spirit of the educators.

Supt. C. B. Glenn, president of the department, has arranged for the general meetings a series of addresses that include practically every aspect of school administration. The Youth Problem which is at present the most perplexing before the country will be especially treated. Among the new speakers, who will appear on the general program of the Association, will be Dr. James G. Conant, president of Harvard University, and Prof. William Lyon Phelps of Yale University. Dr. Floyd W. Reeves, chairman of the President's Advisory Committee on Education, will make a progress report on the important study which his committee is making.

While the convention promises a most busy week of serious educational business, a friendship dinner has been arranged as a high spot of the entertainment which the members may enjoy. It is expected that more than two thousand conventionists will sit down to this dinner and witness afterward an entertainment provided by a spectacular ice carnival. President Glenn, with characteristic southern hospitality, has arranged another convention entertainment in the nature of a reception and tea, to be extended to new members as a welcome. Dr. Glenn and members of the executive committee will do the honors at the Ambassador Hotel, on Monday, February 28.

As in previous years, the three important afternoons of the convention on Monday, Tuesday, and Wednesday will be devoted to such major problems as Education for Adjustment,

The Improvement of the Schools, and An Expanded Program of Industrial Education, etc.

Throughout the general sessions and group meetings of the convention, and in the annual conferences of other groups, held in connection with the school executives' annual gathering,



*Superintendent C. B. Glenn,  
Birmingham, Alabama  
President, American Association of School  
Administrators, who will preside over the  
Atlantic City Convention.*

various aspects of today's handicaps to young people will be considered. The National Society for the Study of Education will devote one of its sessions to "Guidance in Educational Institutions." Part One of the yearbook, prepared by a committee which Dean Grayson N. Kefauver, of Stanford University heads, is devoted to that subject.

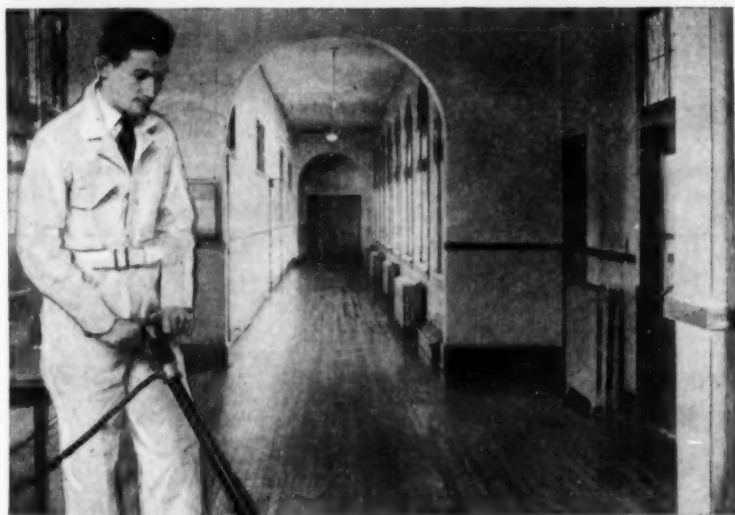
The annual conference of a score or more of educational groups will precede the general convention, or hold meetings in connection with it. The American Educational Research Association will hold its annual dinner on Monday evening. The Department of Secondary-School Principals will honor with a recognition dinner Charles H. Judd, who is retiring from his position at the University of Chicago. President Robert M. Hutchins of that institution will deliver the address. The Elementary-School Principals will devote one of their principal sessions to reminiscence, dramatically re-enacting scenes from log-cabin school days. The principals will renew their acquaintanceships with the beloved William Holmes McGuffey, America's best-known school teacher, when Ernest Horn of the State University of Iowa, conducts a class of a dozen "scholars" who were students of the McGuffey readers long ago.

While railroad certificates entitling the bearer to reduced convention rates was abandoned when railroad fares were revised downward, excursion tickets to Atlantic City may still be purchased from points in the West and South. Hotel accommodations in the winter at Atlantic City are reasonable in cost. Reservations may be made through the Housing Bureau, 16 Central Pier, Atlantic City, N. J.

♦ Chelsea, Mass. The school board has voted to establish a merit list for the selection of candidates for teaching positions in the city schools. The board adopted a policy that all candidates must have earned eight credit hours in education in order to qualify for teaching positions. The latter requisite becomes effective in June, 1939.



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### New Books

#### The Book of Birds

Edited by Gilbert Grosvenor, and Alexander Wetmore. Vol. I, cloth, 356 pages; Vol. II, cloth, 374 pages. Published by The National Geographic Society, Washington, D. C.

Volume I deals with diving birds, ocean birds, swimmers, wading birds, wild fowl, birds of prey, game birds, and shore birds. Vol. II describes owls, woodpeckers, flycatchers, crows, jays, orioles, creepers, thrushes, swallows, tanagers, wrens, warblers, humming birds, finches, and sparrows.

In the 738 pages of the two-volume set there are 204 pages of full-color plates painted by the distinguished artist-naturalist, Major Allan Brooks. Where the female differs from the male in plumage, each form is faithfully presented. Six hundred and thirty-three species and scores of subvarieties are thus described. There are also 228 monochrome photographs, and seventeen maps noting the migratory travels of birds.

The text is provided by a series of authors, each of whom has specialized in bird-life studies. The work is so arranged that any lover of birds desirous of an intimate knowledge of the habits and qualities of any particular variety of birds, may readily secure the same.

This is unquestionably the first complete work ever published which portrays with comprehensive detail and illustration the color and the major species of birds of the United States and Canada.

Considering the comprehensiveness of the work and the fact that it took years of patient labor and considerable means to produce the same, it must be admitted that the price exacted is nominal. The Society has been able to do this

owing to the fact that much of the material was published in the *National Geographic Magazine*. At Home and Away

By Nila B. Smith. Four pamphlets, 16 pages each; price, 12 cents. Silver, Burdett & Company, New York, N. Y.

Units to accompany the Unit-Activity Readers. Such activity topics as helping at home, making a playhouse, etc., constitute the subject matter.

#### Modern-School Arithmetic (sixth grade)

By John R. Clark, Arthur S. Otis, Caroline Hatton, and edited by Raleigh Schorling. Cloth, 228 pages. Price, 72 cents. The World Book Co., Yonkers, N. Y.

The new edition of the Modern-School Arithmetics holds in mind child participation in the daily activities of life which involve the use of quantities and figures.

Book six introduces many interesting situations which have their appeal to the youthful mind. It is a continuation of book five, resorting to new and more involved phases of plain and decimal fractions. The pupils use such interesting things as the automobile, bridge engineering, collecting stamps, kites, repairing a roof, operating a printing press, and the like for completing their study of fractions. The textbook opens with a review of the fundamentals of arithmetic, and concludes with chapters on banking, graphs, scale drawings, personal and club accounts, etc.

Each unit includes frequent reviews and concludes with a diagnostic and a progress test. Excellent use is made of colored illustrations, puzzles, oral problems to maintain interest.

#### Junior Home Problems

By Kate Kinyon and L. T. Thomas. Cloth, vii-310 pp. B. H. Sanborn & Company, Chicago, Ill.

This text on home relations and homemaking essays the difficult task of developing in young girls knowledge, attitudes, and habits of home-life—all without a fundamental philosophy and

aim in life and without well-rounded motivation. The techniques of financing the home, of house-keeping, of caring for young children, of home treatment of illness, of hospitality in the home, of community relations, of intelligent consumer activities are well presented and supported with activity projects. The bibliography is not altogether appropriate.

#### On Jungle Trails

By Frank Buck. Cloth, viii-280 pp. World Book Company, Yonkers, N. Y.

The author writes vividly, instructively, and with much fascinating incident. His books appeal because they have the thrill of adventure in them. But he exaggerates and he endows animals with intelligence that is quite unreal.

#### Remedial Reading

By Marion Monroe and Bertie Backus. Cloth, 162 pages. Price, \$1.40. Houghton Mifflin Company, Boston, Mass.

While this book is labeled a study in character education, it is a fine analysis of the more widely occurring disabilities in reading and an outline of remedial procedures at the various age and school levels.

#### Pupil Rating of Secondary-School Teachers

By Roy C. Bryan. Cloth, 96 pages. Price, \$1.60. Bureau of Publications, Teachers College, Columbia University, New York, N. Y.

This study reveals what some 900 pupils in a junior high school and 600 students in a senior high school think of their teachers. The pupils expressed their own reactions on each teacher's knowledge of subject matter, discipline, ability to explain clearly material studied, sympathy for pupils, fairness, amount of work done by the teachers themselves, amount learned by pupils, pupils' liking for teacher and for subject taught, general teaching ability.

The author's statistical study of the findings makes clear that pupils' opinions are valuable in themselves as a measuring stick, that they may be of great value to the teachers, and that

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they can be used to raise teaching efficiency and learning results. It is particularly interesting to find that the pupils' opinions of their own knowledge of subject matter corresponded closely with the findings of the standard tests.

### Predicting the Quality of Teaching

By Arthur L. Odenweller. Cloth, 158 pages. Price, \$1.60. Bureau of Publications, Teachers College, Columbia University, New York, N. Y.

The author has found that personality is as good a predictive measure for effectiveness in teaching as intelligence is for scholarship. The problem requires vast studies to more effectively evaluate personality and to objectively and comprehensively rate teaching ability and results.

### PUBLICATIONS

#### Status of Rural-School Supervision in the United States, 1935-36

By W. H. Gaumnitz. Paper, 20 pages. Pamphlet No. 72, 1937. Price, 10 cents. Issued by the United States Office of Education, Washington, D. C.

School leaders interested in promoting the growth of trained supervision for rural schools have insisted for many years that such supervision is needed more in the rural schools than in urban communities. The present study offers data on the number of rural supervisors employed by county, district, and similar units of school administration.

In a summary of the situation for the Nation as a whole, it is brought out that there are 28 states in which a beginning has been made by county and similar types of rural-school units to employ professionally trained supervisors for rural schools; in 10 practically all rural schools now have the benefit of such supervision. To these should be added the New England States, at least Massachusetts. In comparing the data for the past two years, it is shown that in some states rural supervision has gained, while in others it has lost ground. In Illinois, not only has the number of county supervisors been trebled, but the per cent of all counties employing officers has been multiplied by seven.

From the standpoint of the Nation as a whole, the movement to provide professionally trained supervisors for rural schools is numerically more than holding its own. During the six years from 1930 to 1936 there has been an increase in the total number of such supervisors from 945 to 975. During the latter year 5 per cent more of the county and similar units of rural-school administra-

tion employed such supervisors than 6 years earlier, indicating that the spread of the movement to new areas is outstripping the growth in the number of persons employed in it. With the easing of the financial situation within the county school systems and with the growing effort of state departments to assume greater responsibility for improvement of the rural schools, it is reasonable to expect that more rapid strides will be made in the future. Two situations are revealed by the study. One is that the successful development of professional supervision for rural schools bears a direct relationship to the financial support given from state and other sources. A second point is that a good deal can be done by a well-trained staff and an organized program of rural-school supervision operated directly by the state. A number of plans for effective state supervision are available for the guidance of other states which may be interested.

#### How Much Heat in Bituminous Coal

Paper, 28 pages. Published by Consumers' Counsel, National Bituminous Coal Commission, Washington, D. C.

This booklet, prepared by the Consumers' Counsel for presentation to the Commission, is a plea for a standard language in describing coal and for the use of specifications in coal purchases.

#### Report of the Auditor of the Board of Education of St. Louis, Mo., for the Year 1936-37

Paper, 141 pages. Issued by the board of education, St. Louis, Mo.

The report is in two parts. Part One contains the general financial statements, and Part Two comprises statistics of the several instructional and auxiliary activities of the board of education, of administration, and of the co-ordinate divisions, and real property holdings.

#### Annual Report of the Secretary of the Public Schools, Tacoma, Wash., for the Year Ending June 30, 1937

The annual financial report outlining the accomplishments of the school year 1936-37. It discusses salary restoration, expenditures for maintenance and new equipment, textbooks and repairs, warrant indebtedness, and expenditures for curriculum-improvement program.

#### Annual Report of the Public Schools of Baltimore County, Maryland, for the Year Ending July 31, 1937

Paper, 16 pages. Issued by the board of education of Baltimore County, Maryland, Towson, Md.

This booklet constitutes the annual report and audit of the Baltimore county schools for the year 1936-37. It includes a statement of cash receipts and disbursements, a summary of the receipts and disbursements for all school purposes, and the report of the auditor.

#### Status of Safety Education in the United States

By F. R. Noffsinger. Paper, 20 pages. Issued by the Safety and Traffic Engineering Department, American Automobile Association, Washington, D. C.

The rapidity with which safety education is being accepted and developed among the schools of the nation makes it difficult for the busy school executive, state school officials, and others engaged in schoolwork to keep up with innovations.

The present study is intended to be of service in acquainting those interested with the present status of safety education—new laws, courses of study, bulletins, teacher training, etc.

#### Organization and Functions of the New York State Education Department

Paper, 27 pages. Bulletin No. 1118, June 15, 1937, issued by the University of the State of New York, Albany.

This bulletin is a statement of the set-up functions of the New York State Education Department. It discusses the board of regents, the division of elementary education, the bureau of instructional supervision, the division of school administrative services, the division of secondary education, the division of health and physical education, the division of buildings and grounds, the division of vocational education, and the division of adult education and library extension.

#### Historical Chart of Mankind

Paper, seven pages. Price, \$1. Printed and published by The United Educators, Inc., 6 N. Michigan Ave., Chicago, Illinois.

This is a historical chart, giving a visual record of man's racial, national, and cultural progress. It covers a long period of history from 4,000 B.C. to the present, is 63 by 16 in. in size, and printed in six colors.

The chart is quite original and represents a vast amount of painstaking effort on the part of the editor in accumulating, evaluating, and selecting the items to appear on the time scale. Of particular interest is the fact that the various parts of the text are printed in different colors to show political developments, literary events, and inventions. By reading across one may see at a glance what has been occurring around the world in any year. By following the line for one race of people the reader can learn the high points in the history of that race.

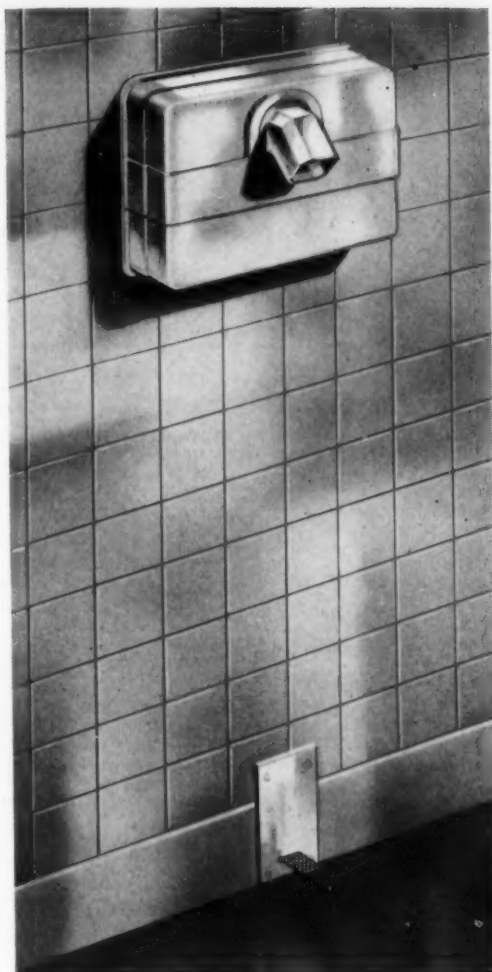
#### Detroit Beginning First-Grade Intelligence Test

By Anna M. Engel and Harry J. Baker. Price per package, \$1.10. The World Book Company, Yonkers, N. Y.

A thorough revision of the Detroit first-grade test, built on the wide use of the earlier test.

The test is nonreading and the pictures are in accord with recent studies of what is most effective for young children. The test is easy to administer and the scoring is easy and accurate. It includes the test, the class record blank, and the manual of directions and key.





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### Personal News of School Officials

• **MR. E. T. STRETCHER**, clerk of School District No. 1, in Portland, Oreg., resigned on December 31 to accept a position as manager of the Oregon Teachers' Retirement Fund. Mr. Stretcher entered the Portland school system April 1, 1910, as secretary to R. H. Thomas, clerk at that time. After holding the position for five years, he resigned to become secretary to Supt. L. R. Alderman. After a period of war service and work in the insurance field, he rejoined the school system in 1924 as assistant clerk. He had been clerk of the school district since February 1, 1926.

• **Mrs. LOIS GROSVENOR HUFFORD**, 92, educator, teacher, and pioneer kindergarten worker, died at her home in Indianapolis, Ind., on November 17. Mrs. Hufford was head of the English department of the Shortridge High School sixteen years, and an Indiana teacher 51 years. She was the last survivor of the originators of the Indianapolis Free Kindergarten Movement.

• The 1936 Roosevelt Medal, awarded to **HELEN KELLER** and her teacher, **Mrs. MACY**, was presented this year to Helen Keller, she having been unable to receive it last year, because of the death of Mrs. Macy. The award was made in recognition of co-operative achievements of heroic character and far-reaching significance.

• The board of education of Philadelphia, Pa., has reorganized with the election of **DR. EDWARD MARTIN** as president; **MORRIS E. LEEDS** as vice-president; **A. B. ANDERSON** as secretary; and **DR. LUTHER HARR** as treasurer.

• **MR. R. J. HABERSHAW** has been elected president of the school board at Cumberland, R. I.

• **Miss ELOISE DAUBENSPECK** has succeeded Miss Helen Johnson as broadcast director of the Columbia Broadcasting System's School of the Air. Miss Daubenspeck is a former teacher and holds degrees in music and education. She was educated in private schools in Spokane and Seattle, the University of Washington, Bellingham Normal School, and New York University.

• **DR. ALBERT J. PULLEN**, 73, died at St. Agnes Hospital, Fond du Lac, Wis., on December 6. Dr. Pullen had served for a 20-year period as head of the board of education and president of the village of North Fond du Lac. He had resided in Fond du Lac since 1922.

• **THEODORE FRED KUPER**, executive manager of the

New York City board of education, has been notified of a change in his title. He will now be known as law secretary of the board. The change in title was made because the new designation is more descriptive of Mr. Kuper's duties. He serves as adviser and secretary to the board's law committee.

• **MR. CHARLES W. FRY**, vice-president of the board of education in Chicago, Ill., died on December 8, at a hospital, following an operation. Mr. Fry was appointed to the board in May, 1933, and in May, 1936, was elected vice-president. He was re-elected in May, 1937.

• The University of Denver, on November 12, held a meeting on the improvement of teachers and administrators. Dr. A. J. Stoddard, superintendent of the Denver schools, spoke on "Individualization of Instruction."

• **DR. JOHN P. COONEY** has been re-elected as a member of the school board at Providence, R. I.

• The board of education of Allentown, Pa., has reorganized with the election of **DR. I. M. WRIGHT** as president, and **CHARLES A. REBER** as vice-president.

• **LEE B. SIEGER** has been elected president of the board of education at Coplay, Pa.

• **EDWARD C. ROCKEL** has been elected president of the board of education at North Catasauqua, Pa.

• **FLOYD A. BEECHER** has been appointed business manager of the board of education at Hamden, Conn.

• **FRANCIS J. BRADY** has been elected president of the board of education at Providence, R. I.

• **DR. CHARLES H. BEE** has been re-elected president of the board of education of Indiana, Pa.

• **F. G. KNIGHT** has been re-elected president of the board of education at Johnsonburg, Pa.

• **ALBERT W. LESKER** has been elected president of the board of education at Brentwood, Pa.

• **LEWIS RICE** has been elected president of the board of education at Whitehall, Pa.

• **DR. J. A. SWINDLER** has been elected president of the board of education at New Wilmington, Pa.

• **H. C. CULP** has been re-elected president of the board of education at Apollo, Pa.

• **GEORGE AYRE** has been elected president of the board of education at Dallas, Pa.

• **F. S. DETMAN** has been elected president of the board of education at Pitcairn, Pa.

• **CHAUNCEY W. SMITH**, State Superintendent of Public Instruction of Nevada, died at his home in Carson City, on December 4.

• **RUPERT P. SORELLE**, author of a number of books on shorthand, died on December 14 in the Lenox Hill Hospital, New York City. Mr. Sorelle worked with John Robert Gregg at the Gregg College of Shorthand in Chicago, and later became vice-president of the Gregg Publishing Company.

• **ALBERT PATTY** has been elected superintendent of schools at South Hadley Falls, Mass.

• **WILLIAM B. APPLETON** has been elected superintendent of schools at Leominster, Mass.

• **D. R. STANFIELD**, of Edison, Ohio, has been elected superintendent of the Scio schools.

• **JOHN A. SHEFFER**, of Gettysburg, Pa., has been appointed senior school business adviser in the Pennsylvania State Bureau of Administration and Finance.

• **DR. AVERY W. SKINNER**, formerly director of examinations and inspections for the New York State Education Department, died on December 13, at the age of 67.

### COMING CONVENTIONS

**January 8.** Massachusetts High-School Principals' Association, at Boston. William D. Sprague, Melrose, secretary.

**January 18-19.** Nebraska Association of School Boards and School Executives, at Norfolk. E. J. Overing, Red Cloud.

**January 20-21.** Association of American Colleges, at Chicago, Ill. G. E. Snavely, New York City, secretary.

**February 1.** Association of School-Board Secretaries, at Harrisburg, Pa. Miss Mary E. Robbins, Sunbury, secretary.

**February 2-3.** Pennsylvania State School Directors' Association at Harrisburg. Preston O. Van Ness, Camp Hill, secretary.

**February 3-4.** Minnesota State School-Board Association, at Minneapolis. John E. Palmer, Fergus Falls, secretary.

**February 5-6.** Indiana City and Town Superintendents' Association, at Indianapolis. Z. M. Smith, Greenfield, secretary.

**February 10-12.** Oklahoma State Teachers' Association, at Oklahoma City. C. M. Howell, Oklahoma City, secretary.

**February 11-12.** Southern Wisconsin Teachers' Association, at Madison. R. L. Liebenberg, Madison, secretary.

**February 21-24.** National School Supplies and Equipment Association, at Chicago, Ill. J. W. McClinton, Chicago, secretary.

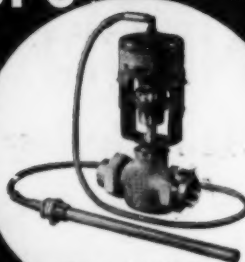
**February 21-22.** Washington State School Directors' Association, at Yakima, Wash. Mrs. W. J. Rue, Manette, secretary.

**February 26.** National Advisory Council on School-Building Problems, at Atlantic City, N. J. Alice Barrows, Washington, D. C., secretary.

**February 26 to March 3.** American Association of School Administrators, at Atlantic City, N. J. S. D. Shankland, Washington, D. C., secretary.

**February 26.** National Association of Secondary-School Principals, at Atlantic City, N. J. H. V. Church, Chicago, Ill., secretary.

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**POWERS Hot  
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**Ends  
Hot Water  
Complaints**

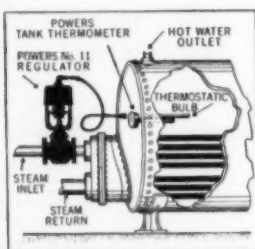
*Pays back its cost several times a year*

**O**VERHEATED water causes complaints, wastes fuel — shortens life of valves and plumbing fixtures and increases deposit of lime in pipes. • Powers regulators will help to reduce these losses. Install them on your hot water heaters. They keep the water at the right temperature. Fuel savings alone often pay back their cost several times a year. As they usually last 10 to 15 years they pay big dividends. *Write for Bulletin 2035.*

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PAVILION, N. Y.  
RUSHFORD, N. Y.  
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*There are 6 bleacher installations in Houston, Texas.*

Wherever quality is the prime consideration, HORN BLEACHERS are the outstanding choice. There is nothing to wear out, as all parts are fitted with oilless bearings and the steel understructure is electrically welded. The "telescoping" method of operation is accomplished by folding arms, which are used only on HORN BLEACHERS. One man can operate even the largest sections.

\*NOTE — The telescoping principle was originated and patented by HORN.  
WRITE FOR NAME OF NEAREST REPRESENTATIVE.

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## News of Superintendents

### NEW ENGLAND SUPERINTENDENTS ELECT OFFICERS

The New England Association of School Superintendents, at its meeting on November 4, elected the following officers for the year 1938:

President, Harold T. Lowe, Newport, R. I.  
Vice-president, Ernest W. Fellows, Gloucester, Mass.  
Secretary-treasurer, Burr T. Merriam, Framingham, Mass.

### LIBRARY SPECIALISTS SELECTED

• Secretary Harold L. Ickes, of the U. S. Department of the Interior has announced the appointment of three library specialists to the staff of the U. S. Office of Education. Mr. RALPH MCNEAL DUNBAR has been named chief of the library service division; Miss EDITH GANTT, specialist in public libraries; and Miss NORA BEUST specialist in school libraries. Miss Beust is a graduate of the University of Wisconsin and holds an M.A. Degree from the University of North Carolina. She had been a member of the University of North Carolina School of Education staff since 1931.

### PERSONAL NEWS

- Mr. WILLIAM B. APPLETON has been elected superintendent of schools at Leominster, Mass. He succeeds the late William H. Perry.
- Mr. WARREN J. YOUNT, superintendent of schools of Bedford, Ind., has been elected president of the Southern Indiana Superintendents' Club.
- Dr. HARL R. DOUGLASS has resigned as professor of education at the University of Minnesota. He has been appointed head of the division of education at the University of North Carolina.
- JAMES H. BAILEY, formerly superintendent of schools at Litchfield, Minn., has been appointed director of teacher personnel in the Minnesota Department of Education.
- Dr. HERBERT PATTERSON, Dean of the School of Education and director of the summer session of the Oklahoma A. and M. College, Stillwater, Okla., has been made Dean of Administration at the same institution. Dr. Patterson succeeds Dr. N. Conger, formerly director of teacher training for Oklahoma.
- Mr. JOHN A. SEXSON is one of those nominated for the presidency of The American Association of School

Administrators. Mr. Sexson received a majority of all the votes cast in the primary choice.

- Mr. C. M. BREWSTER has been elected superintendent of schools at Sheffield, Ala. He succeeds L. E. Creel.
- Mr. D. H. PATTON, of Bellevue, Ohio, has been elected assistant superintendent of schools at Toledo. Mr. Patton will have charge of the supervision of the elementary schools.
- Mr. CURTIS J. BOWMAN has been appointed Assistant Superintendent of Schools in charge of business affairs for the board of education at Akron, Ohio. Mr. Bowman succeeds M. M. Konarski, who recently resigned to accept a position in Charleston, W. Va.
- Mr. FRED L. WITTER, superintendent of schools at Burlington, Wis., was guest of honor at a gathering held on November 20, on the occasion of his twenty-fifth anniversary as head of the local school system. Mrs. J. N. Henriott acted as toastmistress, and talks were given by Mrs. J. F. Bennett, Mr. Sherman Dudley, Mr. Otto Steingraber, and Mr. Charles Yahr. Mr. Witter was presented with a traveling case.
- Mr. M. M. KONARSKI, formerly assistant superintendent in charge of business affairs for the board of education of Akron, Ohio, has resigned to go into business as consultant in schoolhouse construction.
- Dr. DAVID E. WEGLEIN, superintendent of schools of Baltimore, Md., has been elected president of the Middle States Association of Colleges and Secondary Schools.
- Dr. CLAUDE L. KULP, superintendent of schools of Ithaca, N. Y., has been re-elected president of the New York State Teachers' Association.
- Mr. J. T. ANGUS, formerly principal of the high school in Mexico, Mo., has been elected to the staff of the State Teachers' College at Kirksville.
- Mr. THOMAS R. WELLS, formerly principal of the high school at Pascagoula, Miss., has been elected superintendent of schools. Mr. Wells succeeds E. P. Sylvester.
- Mr. RAY H. BRACEWELL, formerly principal of the high school at Burlington, Iowa, has taken over his duties as superintendent of the city schools. Mr. Bracewell succeeds W. G. Brooks. Mr. ROBERT I. WHITE has succeeded Mr. Bracewell as principal of the high school.
- Mr. HUBERT WHEELER, of Mt. Vernon, Mo., has become superintendent of schools at Butler. He succeeds W. J. Graff, who has gone to Marshall.
- A dinner was given recently in honor of ALBERT S. TAYLOR, who has been appointed assistant superintendent of schools of New York City. Mr. Taylor was formerly principal of the Clark Junior High School.
- Mr. HEROLD C. HUNT has become superintendent of schools in New Rochelle, N. Y. He succeeds Clifford S. Bragdon.

- WALLACE L. ARNHOLT, of Carey, Ohio, has been elected superintendent of schools at Bellevue.
- RAYMOND CARROLL, of Postville, Iowa, has been elected superintendent of schools at Oskaloosa.
- Mr. J. J. VINEYARD, formerly principal of the junior-senior high school in Junction City, Kans., has become superintendent of schools in Nevada. He succeeds W. C. Fowler.
- SUPT. H. F. DOW has been re-elected head of the schools of Danbury, Conn., for a three-year term.
- SUPT. FRANK CODY, of Detroit, Mich., has been made a member of Phi Delta Kappa, national honorary education fraternity.

### DR. BROOME RETIRES

• Dr. EDWIN C. BROOME, for seventeen years superintendent of schools of Philadelphia, Pa., has been granted a six months' leave of absence, beginning January 1, 1938, for the restoration of his health. At the end of the six months, he plans to retire from the position. While Dr. Broome's request was regrettably granted, the members of the board extended a word of appreciation of the superintendent's zeal and progressive spirit, making mention of the many years of very able service to the Philadelphia schools, and the notable improvements effected in the school system during the period of service.

### SOUTHERN EDUCATORS PAY TRIBUTE TO S. L. SMITH

Tributes well deserved were paid on November 17, to Samuel L. Smith, southern director of the Julius Rosenwald Foundation, at Nashville, Tenn., at a dinner honoring him on his approaching retirement as the Rosenwald executive officer.

The story of the work done by Samuel L. Smith was told at the evening gathering by educational leaders throughout the South. Six speakers, including Julius Rosenwald's son, Lessing H. Rosenwald, spoke at the banquet. Mr. Rosenwald was introduced by the president of the foundation, Edwin R. Embree, of Chicago, who acted as toastmaster.

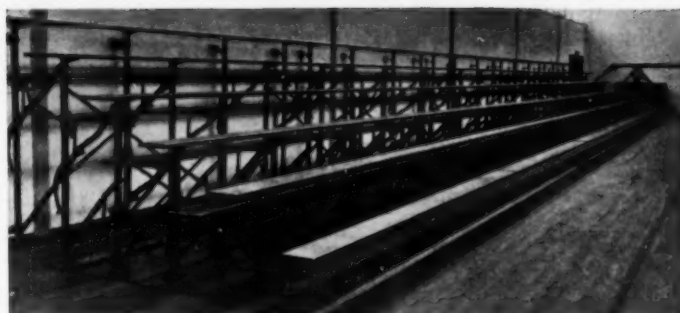
At the conclusion of the speaking, Mr. Embree presented to Mr. Smith a framed letter from President Roosevelt, congratulating him for the work he has done for Negro education through the Rosenwald Fund, and extending him personal good wishes. In his commendatory letter, the President said: "As a pioneer in this work you have championed the cause of improved educational facilities for Negroes, large numbers of whom are enjoying better schoolhouses and better advantages generally because of your interest and encouragement."



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Size of gymnasium floor . . . . . Exact distance, out-of-bounds line to wall . . . . . Lengths, wall spaces available for seating . . . . .

(A rough plan of floor showing doors and radiators will help.)

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## School Board News

### KEEPING FAITH WITH THE SCHOOL

Mr. James J. Weadock, Jr., writing in the *Bulletin of the American Library Association*, outlines the duties and responsibilities of the public library trustee. If the school-board member will substitute in the following extract the words public school for public library he will have a clear statement of his own responsibility.

"The trustee of a public library has, as his first duty, the task of understanding and appreciating his functions and responsibilities. He has accepted a trust and that stewardship spells many obligations. He has, by his acceptance, made himself the servant of an ever changing and unsympathetic reading public. No matter what his private enterprise—his library and the meetings of his board should, if he wishes to give his community a wise and satisfactory stewardship, be considered by him as his foremost outside activity and become, if you please, an everlasting hobby. Generally speaking, the physical property known as the library building is there awaiting his supervision. The prime essentials of a good library are, of course, a competent, well-trained head librarian; sufficient finances to meet a well-planned budget; a book stock sufficient to meet the local requirements; and a trained, qualified, and loyal staff."

### OBJECTIVES OF THE PENNSYLVANIA SCHOOL-BOARD ASSOCIATION

The annual meeting of the Pennsylvania State School Directors' Association will be held in Harrisburg, February 2 and 3, 1938. The annual secretaries' meeting will be held on February 1. The program will concern itself with:

1. An increase in the membership to 1,600. It is now 850.

2. An amendment to the present teacher-tenure law.

3. Additional state subsidy for the support of schools and the relief of real estate tax.

4. Modification of the 44-hour week as it affects school districts.

5. Service to school districts of the state by means of their full-time executive secretary, who may act as a middleman between local districts and state bureaus.

The objects of the association as stated are as follows:

(1) To secure united co-operation in handling school-board problems and to endeavor to bring about improvement of the public schools; (2) to advocate needed legislation and to scrutinize all bills proposed; (3) to promote greater activity and higher efficiency on the part of all school directors in order to secure the best results in the management of the schools; (4) to develop character education in every institution of public-school training within the commonwealth.

The section dealing with the matter of dues says: "The annual dues of each board that is a member of the association will be as follows: first-class districts, \$25; second-class districts, \$15; third-class districts, \$10; fourth-class districts, \$5. Dues from individual members not representing school boards, will be \$2."

### OFFICERS OF NORTHERN KENTUCKY SCHOOL-BOARD ASSOCIATION

The Northern Kentucky School-Board Association, following the organization of the association, has elected the following officers:

President, Henry B. Schuerman, Carrollton  
Vice-president, Blaine Lewis, Ashland  
Secretary, Dr. William D. Nicholls, Lexington  
At the call of Edward W. Pflueger, chairman,

the school-board members from nine counties of northern Kentucky, met on November 11, 1937, and elected an executive committee. The committee comprises Dr. Fred Weber, Newport; Clarence Winter, Dayton; Mark Cook, Burlington; Hugh M. Lawton, Bellevue; H. R. Stegeman, Fort Thomas; Charles Graziani, Newport; Dr. C. W. Justice, Ludlow; J. A. Culbertson, Cincinnati; Henry Schroeder, Covington; and Edward W. Pflueger, Covington.

### ILLINOIS SCHOOL-BOARD ASSOCIATION DISCUSSES SCHOOL LEGISLATION

The Illinois State School-Board Association, at its recent meeting in Springfield, on November 18 and 19, among other things, discussed recent school legislation of interest to school officials. A total of 188 school-board members representing 106 school districts, were in attendance.

The high spot of the convention was the annual banquet address by Dr. Agnes Samuelson, Superintendent of Public Instruction of Iowa, who spoke on "The Unique Function of Education in a Democracy." Other speakers were S. S. Duffamel, Springfield, who talked on "The Results of the 1937 Legislative Session"; Dr. R. E. Hieronymus, Urbana, who discussed "Teaching Temperance"; Charles C. Stadtman, Springfield, who took for his subject, "A Board's Responsibility in the Educational System"; and Dr. Paul J. Misner, Glencoe, who talked on "Progressive Education."

The association adopted resolutions urging consideration of constructive school legislation, and pledging the support of the association to such legislation.

The association elected the following officers for the year:

President, B. B. Voris, Waterloo;  
Vice-president, Ira Carman, Bellwood;  
Secretary, A. D. McLarty, Springfield;  
Treasurer, H. H. Coe, Springfield;  
Trustees: Harold Norman, Bannockburn; Gilford Hill, Lombard; G. T. Stevenson, LaRose.



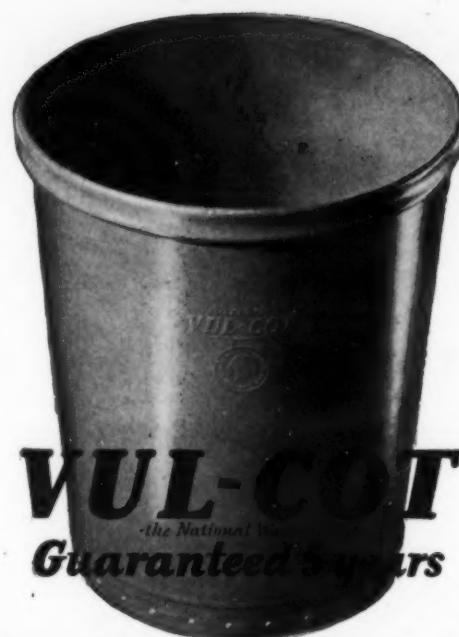
## DRAPER Durable DARKENING WINDOW SHADES

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### ADMINISTRATION

♦ The school board at Lincoln, Nebr., has purchased an audiometer to test the hearing of the 15,000 pupils in the public schools.

♦ Wood River, Ill. A new system of grading has been introduced in the community high school. Letters of the alphabet are used to indicate grades, instead of the usual numerals. The system seeks to classify pupils according to the quality of schoolwork and effort and puts less emphasis on the actual grades received.

♦ El Paso, Tex. A twelve-grade system has been put in operation in the public schools, beginning with January 1. Under the system, the present grades will be renumbered, so that pupils will graduate from grade school in the eighth grade, and from high school in the twelfth grade.

♦ Lyons, Kans. The school board has purchased a sound projection machine for showing educational films treating of history, geography, social service, etc.

♦ Detroit, Mich. A radio program of an experimental character has been adopted for the public schools this year. The Detroit system is exploratory and experimental and involves broadcasting on public-address systems and broadcasting of educational program from radio stations in the metropolitan district. The basic purpose of the radio program is the interpretation of education to the parents and the public.

♦ Madison, Wis. A committee representing the members of the school staff has been appointed to handle the matter of teaching citizenship and respect for public office. The committee has prepared a bulletin which is available to school officials.

♦ Ellinwood, Kans. A new type report card has been placed in use this year. The card is a step between the formal card and the idea of "no card." Both the citizenship and scholastic achievements of the pupil are noted in a letter to parents. Only points of necessary improve-

ment or outstanding abilities are stressed. Where no mention is made, it is understood that the work in the subject is satisfactory.

### PAY-AS-YOU-GO POLICY FOR WISCONSIN SCHOOLS

That Wisconsin schools are rapidly heading toward a "pay-as-you-go" policy, is the contention of the Wisconsin Education Association, which shows that since 1932 the schools have reduced long-term obligations more than any other governmental branch.

Since 1932, long-term school indebtedness has been reduced from \$39,500,000 to \$27,500,000. The total reduction for schools was approximately 33 per cent in contrast to a reduction of only 7 per cent in the total debt for the state and all minor divisions.

In terms of dollars, out of a total reduction since 1932 of \$26,000,000 for all units of government, more than \$12,000,000 was made by the schools; the schools' reduction representing 46 per cent of the total decrease in long-term obligations outstanding. The per-capita school debt has decreased from a little less than \$20 to less than \$14 during the same period.

The association emphasized that the reduction in outstanding debts of the schools means a decrease in annual interest payments of approximately \$500,000, leaving that amount available to reduce property taxes or for costs more essentially educational.

### SCHOOL LAW AND LEGISLATION Recent Court Decisions

A Florida court has decided<sup>1</sup> that a principal who served in that capacity in one school for two years, and in another for the same period, has served the probationary period of three years. The court held that this was an equivalent for continuous service in one school. The same court decided that a statute providing for teacher tenure in Orange County<sup>2</sup> during good behavior and as long as they rendered efficient

service was not unconstitutional.

A Massachusetts court has decided that a school committee which had elected a teacher to a position of principal had authority to rescind such action after a change in the personnel of the school committee before the time fixed for taking the office. The construction placed by the court here is that the principal is merely a teacher who is intrusted with duties subject to the management of the school administrators.<sup>3</sup>

A statutory requirement that a teacher's contract be in writing did not apply to a teacher who was re-employed after the completion of the probationary period. It has been so decided by a recent Minnesota court decision.<sup>4</sup> The same court has held that ratification by a school board of superintendent's re-employment of a teacher, after the completion of a probationary period, would list such appointee as a regular teacher.

An injury case was decided by a Michigan court.<sup>5</sup> A child was instructed by its teacher to water plants in the regular course of the school activities, and was injured when cut by broken glass. A suit for damages followed. The court held that the teacher in the case was not liable since there was no wanton or willful negligence.

A Kentucky court decided that the constitutional inhibition against devoting funds raised for education other than common schools, applies to local political units as well as to the Legislature. A proposal to vote money for a junior college was thereby defeated.<sup>6</sup>

<sup>1</sup>State ex rel. Glover v. Holbrook, 176 Southern reporter 99, Fla.

<sup>2</sup>Ibid.

<sup>3</sup>McDevitt v. School Committee of City of Malden, 10 Northeastern reporter (2d) 100, Mass.

<sup>4</sup>Hosford v. Board of Education of City of Minneapolis, 275 Northwestern reporter 81, Minn.

<sup>5</sup>Gaincott v. Davis, 275 Northwestern reporter 229, Mich.

<sup>6</sup>Pollitt v. Lewis, 108 Southwestern reporter (2d) 671, Ky.



## A SUGGESTED DESIGN FOR AN ACTIVITY SCHOOL UNIT

(Concluded from page 26)

activities of the curriculum. In other words, at some level in the school the activity in some subjects requires more elaborate and particularized equipment. At present it seems to be generally accepted that this departmentalization should start with the seventh grade.

This classroom is for grades between the first and seventh.

### 3. Wall Space

There should be as much unbroken wall space as possible, space which may be covered for weeks without interfering with other activities. There should be plenty of tack board and replaceable strips for nailing.

It has been assumed in this study that the classroom part of the building is a single story, thereby permitting natural light to come in at the top as in factory saw-tooth construction. All windows would face the north, thus providing nearly uniform light all day.

### 4. Adequate storage space

There should be a large storeroom for the storage of materials. The storeroom should be large enough to receive the collapsible worktables when not needed in the classroom as well as general supplies. Each child should have a small cabinet for his own work materials.

### 5. Adjacent toilets

Separate toilets for boys and girls should be included in each grade suite.

### 6. Access to outside

While it has been assumed that this school is in a less temperate region, it is important to have easy access to the outdoors for play and other activities.

### 7. Air conditioning

The usual centrally controlled heating and changing of air is contemplated. It is proposed that the floor be warmed by running steam pipes beneath the floor slab. This puts a part of the necessary heat where it is very much needed in the room, and makes the floor a comfortable place on which to sit.

### 8. Miscellaneous "built-in" equipment

Tack board, nailing strips, and students' cabinets have been mentioned. There should also be a sink and workbench or counter. On at least one wall there should be a full-length mirror. This not only would give apparent spaciousness to the room, but would serve primarily for self-observation and comparison, thus improving posture, appearance, and deportment. If made large enough, it could be used as a screen for stereopticon and moving pictures.

### 9. Electric equipment

A central public-address system should be installed with connections to reproduce radio programs and to permit conversation between the room and the administrative office. The usual standard convenience outlets, including a lantern socket, are satisfactory.

The general room lighting should be indirect, being thrown from a reflecting

trough against the sloping ceiling, and thence diffused over the remainder of the room.

The above program of limitations and requirements has been embodied in the accompanying design for a class unit, with results which are interesting architecturally as well as educationally.

The unit, as designed, lends itself readily to incorporation in a complete school plant as exemplified in the perspective view.

While no wall windows are shown on the drawings, it might be desirable to have at least some low, clear glass to relieve the feeling of being "shut in"; and to offer an opportunity to change the focus of the eyes. The dotted lines on the façade of the unit indicate a possible location of fixed sash for this purpose.

## TRENDS IN SCHOOL PLANNING AND CONSTRUCTION IN MINNESOTA

(Concluded from page 68)

pine<sup>5</sup> throughout, and the result was a very pleasant, unusual room.

The greatest advancement in school-building construction in the last decade has been in the mechanical plant but no attempt has been made to analyze these. They are not often discernible to the public eye, but the administrator and the engineer who come into contact with automatic firing, temperature control, ventilation, and air conditioning realizes their value. The use of scientific knowledge in constructing and designing of school buildings is moving so rapidly that no one can prophecy what the next ten years will bring.

<sup>5</sup>Bagley, Minnesota.

### SCHOOL BONDS

During the month of November, bonds for permanent school improvements were sold in the amount of \$7,764,815. Refunding bonds and short-term paper were sold for \$151,850.

The average interest rate was 3.17 per cent.

The largest bond sale was in New York, with \$1,594,640, and Ohio was second, with \$755,400.

### SCHOOL-BUILDING CONSTRUCTION

In 11 states west of the Rockies, contracts were let in November for 19 new school buildings, to cost \$952,000. Seven additional projects were reported in preliminary stages, to cost \$905,000.

In 37 states east of the Rockies, Dodge reports that 330 educational buildings were contracted for during the month of November. The total amount of the contracts was \$19,328,900. Of these, 275 were school and college buildings, to cost \$16,020,100, and 30 were libraries and laboratories, to cost \$2,480,800.

### NEW SCHOOL BUILDINGS

♦ Hawley, Pa. Bids have been received for the construction of a high school, to cost \$130,000. A PWA grant of \$58,622 has been obtained to aid in the construction cost.

♦ New Knoxville, Ohio. Plans are being completed for the construction of a new school, to cost \$141,000. The building will be financed with a PWA grant of \$63,310.

♦ Decatur, Ind. Construction work has been started on a new school, to cost approximately \$250,000. A PWA grant of \$110,045 has been obtained.

♦ Pascagoula, Miss. Bids have been received for the construction of a high-school building, to cost \$120,000, and for the remodeling of the old high school, to cost \$24,000.

On corridor, classroom or gym floor, Seal-O-San continues to win laurels as the long-wearing, inexpensive finish. That is why superintendents in more than 4200 schools have Seal-O-San floors. Once applied, Seal-O-San lasts for years. It penetrates deeply into the wood fibres . . . actually reinforces the wearing surface. And what maintenance economies it offers! An occasional sweeping with a dry mop keeps a Seal-O-San floor clean and beautiful! Remember Seal-O-San — the one floor finish that gives more wear with less care.

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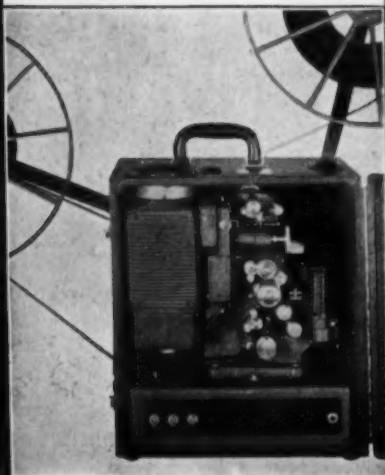
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## WYANDOTTE HIGH SCHOOL, KANSAS CITY, KANSAS

(Concluded from page 46)

turn tank, from which the boilers are automatically supplied.

The heating system is of the "split" type, radiation losses being supplied by column radiation, mounted on the exterior walls, and ventilation being supplied from central fans, located in various sections of the building.

Most of the ventilating fans are in the attic section of the building, the warm air being distributed through metal ducts in the attic space, and delivered downward into the various rooms. Grilles in the rooms are of the uniflow type.

Provision is made for use of outside air, or for partial recirculation. All outside air is drawn through renewable filters and is automatically humidified.

Certain rooms, such as foods laboratories and chemistry rooms, where odors originate, and certain other rooms, such as orchestra and vocal music rooms, where noise is a factor, are not connected to the general ventilating system, but are equipped with individual unit ventilators.

All heating units are controlled by a pneumatic temperature control system, which is supplemented by an electric zone control system, for use during nights and holidays.

The building contains approximately 35,000 feet direct radiation and 12,000 square feet of indirect heating surface, with 21,000 equivalent feet radiation for hot water, and 15,000 feet equivalent radiation for heating water in natatorium.

All power equipment in the building is electrically operated. Underground service lines from the municipal light and power

plant deliver current to the transformer room within the building at 13,200 volts. The approximate motor load is 250 h.p. Electric lighting accounts for an additional 425,000 watt load. Circuit breakers are used in the branch cabinets on lighting circuits. The electrical system also includes fire horns, corridor-type class bells, house telephones, a secondary clock system, and an experimental panel for science rooms. Provision has been made for future installation of public-address equipment.

The auditorium stage is equipped with a remote-control vacuum-tube type board, operating on both stage and auditorium house lights.

A freight elevator is located in such a manner that it serves the shop section, the auditorium, and the academic section of the building. An automatic passenger elevator is located in the academic section of the building.

The natatorium is fully equipped with circulating pumps, filters, heaters, and chlorinator.

♦ Mexico, Mo. The entire school plant has been renovated within the past three years. The school district now has a new plant, comprising two senior high schools, one white and one colored, and three elementary schools of the most modern type. All of the work was done under the auspices of the PWA.

♦ Hutchinson, Minn. Construction work has been started on the new elementary school, to cost \$360,000. The building is a PWA project.

♦ Atlanta, Ga. The buildings and grounds committee of the board of education has asked the city council to finance a building program which has for its purpose the elimination of portable buildings.

♦ Naugatuck, Conn. The board of education has taken steps toward the prevention of fires in school buildings. It has been proposed that a fire-alarm box be installed on each floor of the high school. Boxes will be placed close to each grade school.



The southeast front of the Wyandotte High School, Kansas City, Kansas, as seen from the roof of the shop wing.—Hamilton, Fellows & Nedved, Architects, Chicago, Illinois, and Jos. W. Radotinsky, Associate Architect, Kansas City, Kansas.



## Stage Equipment

Velour Curtains — Draperies, Scenery and Rigging Equipment of the Highest Quality.

Service and Installation by  
Experienced Personnel

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### PLAYGROUND and SWIMMING POOL EQUIPMENT

More than twenty years of experience.  
Catalog sent on request.

**RECREATION EQUIPMENT COMPANY**

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Also Bronzalun,  
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PREVENT ACCIDENTS  
ON STAIRS and FLOORS

Worn Steps Economically Repaired

A hard metal matrix into which is cast an abrasive next in hardness to the diamond assures durability and anti-slip efficiency.

Specify Feralun and Be Sure  
**American Abrasive Metals Co.**  
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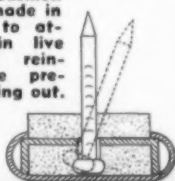
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Faultless Cushion Chair Glides are mounted in live rubber which gives them amazing flexibility and resilience. Note how the steel reinforcing frame prevents the nail from pulling out of the base. The round surfaces glide smoothly over the floor without scraping or grating. And for easy rolling, free swiveling office chairs, there's nothing like Faultless Double Ball Bearing Casters. Send for catalog and prices, or ask your supply house.

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Faultless Quiet Cushion Chair Glides are made in four sizes. Easy to attach. Mounted in live rubber. Steel reinforcing frame prevents nail pulling out.



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Caster  
with  
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**The J. B. Miller Keyless Lock Co.**

200 Lock Street

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Kent, Ohio

The Miller Red Dot No. 35



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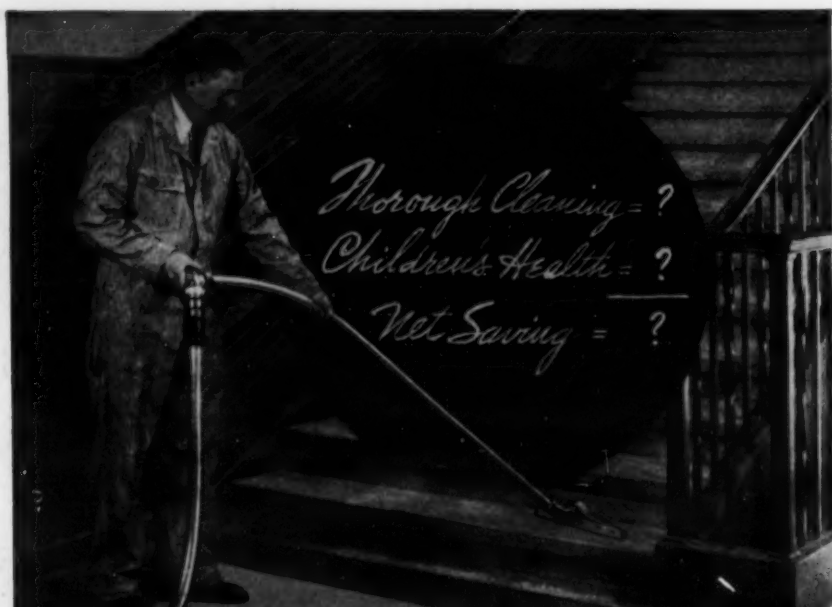
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VACUUM  
CLEANING  
SYSTEMS

THE SPENCER  
TURBINE  
COMPANY  
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CONNECTICUT

### MODERN TRENDS IN SCHOOL PLANNING AS A RESULT OF CHANGING CURRICULUMS

(Concluded from page 24)

fundamental work in curriculum development which will have far-reaching significance in school-plant planning. Your school staff may not desire to proceed with a maximum of integration, it may not be interested in the expansion of the activity program into high-school areas, it may have its own concept of the place of guidance in the school, and it may have set up its own principles for student and faculty participation in administration. No matter what its program is, if the faculty is professional in its attitudes and sincere in its approach to its problems, the actions

which it takes in the fields of curriculum, guidance, and administration will have an important bearing upon the schoolhouse of tomorrow. Nothing is quite so important in our American cities today as to explore the relationship to the modern movement in education to school-plant planning so that tomorrow's investments in the school plant may make possible the desired type of educational return.

### MODEL CLASSROOMS OF 1937

(Concluded from page 50)

the Whittier City School District. This room is of standard size, but the cloakroom has been replaced by wardrobes with doors that swing back. In one of these there is a built-in sink with storage space for clay and paints.

One feature of the room is a pair of sliding

doors which push back and leave an opening 18 feet wide out across an open corridor on to the playground or school lawn. Storage cabinets are built in below the windows, and two workbenches slide in and out of this cabinet when the children have a construction period.

A motion-picture screen has been built into a recess back of folding doors in the front blackboard. This makes it possible to carry on visual-education work with a minimum of effort. There is also a receiving unit of a public-address system in the room. Movable tables and chairs are provided for the children.

This room is built around the idea that all the available space should be used all the time. During a construction period, the tables are pushed back, the benches and sawhorses are pulled out, and a maximum of space is available for the activity. At the close of the period, the benches and tools go back into their places and the room can be tidied up. This is a feature that appeals very strongly to teachers.

### ADVANTAGES OF HARDWOOD BLOCK FLOORS IN SCHOOL CONSTRUCTION

(Concluded from page 60)

bonded to the concrete slab, the impact of heels is absorbed by the mass of the concrete and there is no vibration—hence no reverberation.

The selection of a school floor is neither the sole responsibility of the architect nor the school official. Each has his own problems in connection with the floor that must be solved. Recognizing the sterling qualities of hardwood and afraid to experiment with substitutes—yet at the same time in search of a modern flooring that would meet the requirements of modern construction and design—architect and school official have often been in a dilemma. Unit-wood blocks that can be laid in mastic have proved a welcome solution.

### PLANNING BETTER UPPER-SECONDARY SCHOOL PLANTS

(Concluded from page 65)

cafeteria adjacent to the unit. This cafeteria will be provided with a hard floor for dancing, and adjacent to it will be social rooms for faculty men and women, respectively. It is the plan to make this a center for the social life of the college.

The deficiencies of the traditional secondary-school plants can be eliminated. Slight modifications in the old structures will go far toward their removal. New plants can be adapted to the new educational program of student activities. The new upper-secondary-school plant will not be more expensive than the old; it will merely be adapted to a new program of education organized around the objectives of the upper secondary school.

♦ Stewart, Minn. Bids have been received for the construction of a new school for School Dist. No. 33, to cost \$100,000. Of the total cost, the school district has contributed \$50,000, and the PWA has given a grant of \$46,435.

♦ Davidsville, Pa. Bids have been received for the construction of the Conemaugh Township consolidated school, in Somerset County, to cost \$201,588.

♦ Long Beach, Calif. Construction work has been started on the new music and arts building for the polytechnic high school, to cost \$116,114.

♦ Hutchinson, Kans. Construction work has been started on the new school, to cost \$360,000. The building is a PWA project.



# Directory of Equipment Supplies

**ACOUSTICAL TREATMENT**  
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Trane Co., The

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(See Architects Directory, page 99)

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Desk Chair Corp.  
Heywood-Wakefield Company  
Irwin Seating Company  
Lyon Metal Products, Inc.  
Peabody Seating Company, The  
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Weber Costello Co.

**CHARTS**  
Weber Costello Co.

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Finnell System, Inc.  
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Huntington Laboratories  
Midland Chemical Laboratories  
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Midland Chemical Laboratories  
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Midland Chemical Laboratories  
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**DOOR CLOSERS**  
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Wayne Iron Works

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Vestal Chemical Company

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Peabody Seating Company, The  
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Maple Flooring Manufacturers Assn.

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Lyon Metal Products, Inc.  
Royal Metal Mfg. Company

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All-Steel-Equip Company  
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Medart Mfg. Co., Fred

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Huntington Laboratories  
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Bell & Howell  
Universal Sound System, Inc.  
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Christiansen Co.  
Hamilton-Invincible, Inc.  
Kewaunee Mfg. Company  
Kimball Company, W. W.  
Sheldon & Company, E. H.

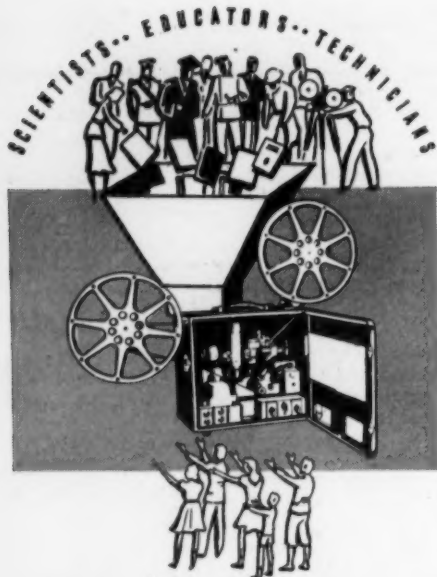
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Evans, W. L.  
K & M Supply Corp.

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## WHY IS PERFECT PROJECTION NECESSARY?

● Prime reason for the success of the motion picture as an educational tool is that, properly presented, it holds the students' full attention.

To realize to the full this value of motion pictures, projection and sound must be so perfect that eyes are not fatigued, that ears catch every word without conscious effort, that interruptions in presentation are avoided.

To get out of a film all that has been put into it, a truly fine projector must be used. Commercial studios which produce industrial films almost unanimously insist that their films be reproduced with the one projector that will present them at their best—the Bell & Howell Filmosound.

Bell & Howell, makers since 1907 of Hollywood's preferred professional ciné-machinery, build equipment as fine mechanically and optically as can be produced by the best craftsmen in this field. Naturally such equipment costs somewhat more originally, but those who buy it find that the small difference represents a definitely lengthened projector life and a freedom from the upkeep bills that make cheaper construction more costly in the end.

"NEW HORIZONS," a recently published booklet, will familiarize you thoroughly with the new teaching tool, the educational motion picture... with its nature, its applications, its values, the technique of using it effectively, and the experiences of educators who are using it. Send the coupon for your free copy. Bell & Howell Company, Chicago, New York, Hollywood, London. Established 1907.

### WRITE FOR A COPY

BELL & HOWELL COMPANY  
1814 Larchmont Ave.,  
Chicago, Ill.

Please mail: ☐ "New Horizons";  
Complete information on ☐ Filmosound  
Projectors, ☐ Silent Filmo Projectors. ASBJ 1-38

Name.....  
Position.....  
School.....  
Address.....  
City.....State.....

# BELL & HOWELL

## After The Meeting

### STORIES FOR SPEECHMAKERS

Wisdom is only found in truth — GOETHE.

#### Best Wishes

Ted: I had a fight with the boy next door.  
Father: I knew it. His father came to my office today to see about it.  
Ted: Well, I hope you came out as well as I did. — Exchange.

#### Top Speed

Two small girls were having a tremendous argument.  
"My daddy's a mounted policeman," said Betty.  
"He rides a horse all day."  
"That's no better than being an ordinary policeman like my daddy," said Peggy, proudly.  
"Oh, but it is!" said the first child. "If there's any trouble, he can get away quicker." — Atlanta Two Bells.

#### A Theory

Stopping to pass the time of day with a farmer, a tourist learned that the farmer's father, who was ninety years old, was still living and working on the farm where he was born.  
"Ninety years old, eh?" asked the tourist.  
"Yes, father is close on ninety," the farmer replied.  
"Is his health good?"  
"Tain't much now. He's been complainin' fer a few months back."  
"What's the matter with him?"  
"I dunno. Sometimes I think farmin' don't agree with him." — Calgary Herald.

#### Tale-Piece

Infants' Mistress: Now Betty, how many fingers have you?  
Betty (*confidently*): Ten, Miss!  
I.M.: Right. Now, how many toes have you got?  
Betty: Ten, Miss!  
I.M.: Well, now! Tell me, how many toes has a horse got?  
Betty (*thoughtfully*): Miss, I'm not sure. You see, I've never seen a horse with his shoes off. — Teachers World.

#### Understood!

Professor: I would like a preparation of phenylisothiocyanate.  
Drug Clerk: Do you mean mustard oil?  
Professor: Yes, I can never think of that name. — Mich. Education Journal.

#### Natural

Professor: "Miss Grey, can you tell me the three classifications into which men are divided?"  
Miss Grey: "Rich, poor, and good-looking."



#### The Kettle and the Pot

In a Negro school there was one boy so black that even the other pupils called him "Midnight."  
All went well until another pupil came to the school who was only a shade lighter than "Midnight."  
On being called his nickname "Midnight," by the new pupil, the black one answered: "Listen heah, you, don't call me 'Midnight.' You's about half-past eleven yo'self."

## School Buyers' News

### NEW TRADE CATALOGS

THE NEW RCA Victor Sound Catalog, just issued by the RCA Manufacturing Company, Camden, N. J., is a helpful publication, listing the sound services available for school use. Included in the catalog is RCA Victor equipment from music-appreciation books and catalogs to elaborate school-wide sound installations. It also includes recording equipment, as well as facilities for playing records over all or part of the system.

The catalog lists the uses of Victor records for teaching elementary, intermediate, high-school, and college classes in music rhythm, instrumental combinations, and music appreciation, as well as for instrumental instruction.

A copy of the catalog will be sent to any school official or supervisor upon request.

\* \* \*

SCHOOL OFFICIALS and architects, in their daily work, come in contact with a wide variety of air-conditioning problems. Sometimes these problems are solved successfully; sometimes not so successfully. There has arisen a need for a book presenting the factual material of air conditioning in such a way that the school official, or architect, will have a well-organized, coherent grasp of the subject and a clear picture of the relationship between the apparently complex parts that go with an air-conditioning system.

The new 325-page *Air Conditioning Manual*, issued by the Trane Company, La Crosse, Wis., is a contribution to air-conditioning science and progress. The manual is an all-inclusive, useful, scholarly, and entirely new contribution to a great and growing industry and represents an investment of \$40,000 and a research study covering three years.

The keynote of the entire manual is simplicity. It envisions the entirety, the scope of air conditioning. The approach is practical. Extensive examples are given for almost every type of problem met in air-conditioning work, and tables are given to present the data in a simple fashion and to avoid time-consuming use of mathematical formulas. The manual contains an analysis of the properties of air, a complete discussion of the computation of steam quantities of steam jet refrigeration, and some original and valuable information on the use of water in relation to air conditioning.

The manual, which was written and compiled by William Goodman, with the co-operation of the staffs of the Trane engineering and laboratory departments, contains all the available information on the science and practice of air conditioning, with all biased catalog material eliminated. It represents the simplest, most comprehensive, and most practical approach to a sound knowledge of air conditioning.

\* \* \*

THE KEWAUNEE BOOK of Metal Furniture, issued by the Kewaunee Mfg. Company, Adrian, Mich., is an interesting publication illustrating the radical changes which have taken place in the design and manufacture of laboratory furniture, and showing how metal is rapidly replacing wood.

The *Kewaunee Book of Metal Scientific Laboratory Furniture* illustrates and describes the company's line of metal scientific laboratory furniture, including laboratory sinks, laboratory furniture, table tops and counters, movable unit furniture, adjustable chairs and stools, and fume hoods.

The booklet also includes construction specifications for the manufacture of Kewaunee metal furniture, covering materials, construction, hardware, finish, and mechanical service. The use of standard units permits equipment to be readily moved and modified to meet changed conditions in the laboratory. Floor-type standard metal furniture units are available for all types of desks and are used to make up lower sections for wall cases and cabinets and fume hoods.

A copy of this book will be sent to any school official upon request.



## NEW TRADE PRODUCTS

**DISTINCTIVE DESIGN** and construction features are embodied in the new "Ever-Hold" stools and chairs, just announced by the Kewaunee Mfg. Company, Adrian, Mich.

The "Ever-Hold" stools and chairs are the result of extensive study and research by the engineering and research departments of the firm, and they represent a product which is original and mechanically perfect.

The "Ever-Hold" stools and chairs save time, increase efficiency, add comfort, eliminate excessive maintenance costs, and are provided with special body-form seats and backs which fit the body, eliminate pressure on the nerves and muscles of the legs, and allow the feet to rest firmly on the floor. They are designed to fit body curves, to allow proper breathing, and to permit full freedom of the arms. Other features are Ever-Hold locking-support rods, automatic lock box, rubber-cushion, metal glides, and hard-rubber swivel casters.

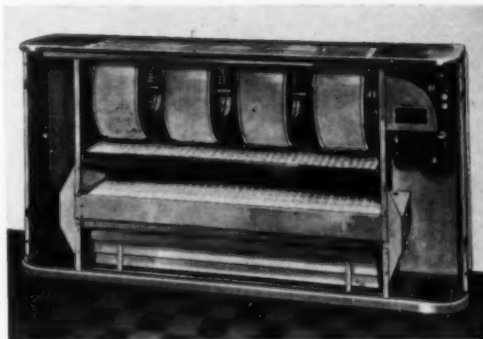
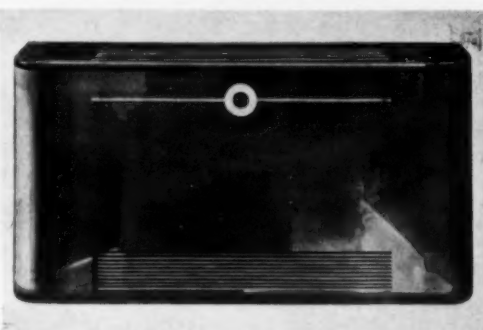
Complete information concerning the "Ever-Hold" stools and chairs is available to any school official who requests it.

**THE NEW HERMAN NELSON AIR CONDITIONER** is the title of an important booklet, announcing the marketing of two entirely new types of Nelson unit ventilators for school use. These air conditioners are declared to be not only attractive in design and economical in the use of space, but provide the greatest operating economy obtained by the various Nelson ventilating units produced in the past.

The damper-controlled type of Nelson Air Conditioner is arranged with a heating element at the bottom of the unit. The air filter is immediately above the radiator, and the fan is at the top so that the air is drawn through the wall intake, the control dampers, and the filter before it is projected into the room.

The new Her-Nel-Co alternating-current motor which operates the four fans, is placed at one end of the unit so that the delivery of air is uniform. Complete automatic regulation is

provided to permit complete damper control, uniform mixing of warm and cold air, and positive prevention of cold drafts in severe weather as well as overheating in mild weather. The outlet grille is streamlined so that the air



*The New Nelson Damper-Controlled Air Conditioner, showing the cover and the new arrangement of fans and motor.*

may be directed at any angle into the classroom for uniform distribution. The heating element is all solid copper, affording minimum

air resistance, quiet operation, and complete drainage.

The second new type of Nelson Air Conditioner is of the radiator-controlled type and is so arranged that all air passes through the radiator. It has all of the advantages of the damper-controlled type.

The complete booklet is available to school authorities and may be obtained from the Moline office of the Herman Nelson Corporation. Complete engineering and installation data are available for engineers and school authorities in charge of installation and maintenance.

**NEW HORIZONS**, published by Bell & Howell Company, Chicago, Ill., is a description in an intelligent, nonpartisan manner, of the advantages of the motion picture as a part of the educational program. The booklet points out that nine definite factors determine good projection, requirements which should be demanded in any school projector regardless of its make. The manner in which the educational motion picture fits teaching methods, types of films available, methods of financing the cost, choice of equipment, simplicity of operation, and other phases of the problem, are also presented. *New Horizons* has been written for those who are interested in its application to modern educational methods. A copy will be sent to any school official.

## MOTION-PICTURE STUDY

The General Education Board, New York City, has given a grant of \$135,000 for the three-year support of the activities of the Committee on Motion Pictures in Education. A clearing house of information and activity on visual problems is to be established under the direction of Charles F. Hoban, Jr., associate in motion-picture education.

The committee is made up of John E. Abbott, New York City; W. W. Charters, Columbus, Ohio; Frank N. Freeman, Chicago, Ill.; Ben G. Graham, Pittsburgh, Pa.; Mrs. B. F. Langworthy, Chicago, Ill.; and Mark A. May, New Haven, Conn.

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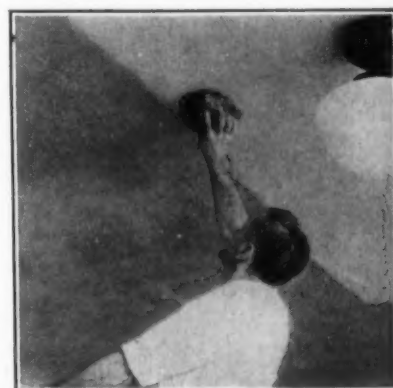


### What "KEEGO" Cleanliness means—

Have bright dishes free of film and stains: Glasses crystal clear without toweling: dishwashing machines free of scale even with very hard water, giving their full cleansing power regularly. "KEEGO" Cleaner does it for you. 100 Lb. Drums: 350 Lb. Bbls.

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Rooms which look pretty good may be so soiled as to reduce lighting by thirty per cent or more. The loss is heavier of course in a really dirty room. Your regular help can wash paint clean with amazing speed and economy — with Wyandotte Detergent. A pound (or a barrel) of this cleanser usually cleans about forty per cent more surface than the same quantity of ordinary cleanser — and does it safely. The help likes it for floors — it makes mopping easy. Odorless — non-slip. Use the same cleanser for washroom and toilet fixtures. Convenient!



### Deodorize— Disinfect

Dissolve Steri-Chlor (powder) in water to make clear solutions of any desired strength. A sure destroyer of germs and odors—safe to the human family, rubber, leather, brushes, cloth and metal. Prevents "Athlete's Foot." The powder holds strength indefinitely. 10 Lb. Cans, 25-100 Lb. Drums, 350 Lb. Bbls.

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